Preliminary Assessment Report

Circle Court Ground Water
117 Circle Court
Willow Park, Parker County, TX

TXN000606965

REGION VI

Prepared in cooperation with the
U.S. Environmental Protection Agency

March 2009

PRELIMINARY ASSESSMENT REPORT

CIRCLE COURT GROUND WATER
WILLOW PARK, PARKER COUNTY, TEXAS
TXN000606965

SIGNATURE PAGE

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and
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Prepared by

Texas Commission on Environmental Quality
Austin, Texas

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NOTE

The State predecessor agencies: Texas Water Quality Board (TWQB), Texas Department of Water Resources (TDWR), Texas Water Commission (TWC), Texas Air Control Board (TACB) and Texas Natural Resources Conservation Commission (TNRCC) referred to throughout this report are now known as the Texas Commission on Environmental Quality. The new agency, TCEQ, became effective September 1, 2002, as mandated under State House Bill No. 2912 of the 77th Regular Legislative Session.

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1 INTRODUCTION

The Texas Commission on Environmental Quality (TCEQ) was tasked by the U.S. Environmental Protection Agency (EPA) Region VI to conduct a Preliminary Assessment (PA) of the Circle Court Ground Water (the Site) located in Parker County, Texas. The PA is an initial screening of the Site's conditions to determine compliance with standards and regulations pursuant to the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) as amended, 42 U.S.C. 9601, et seq. (Ref. 1, 2 and 3). For this purpose, the Site is a geographical area located within a rural area south of Interstate 20 in eastern Parker County, Texas. The source for the release to groundwater is currently unknown.

The specific goals for the Circle Court Ground Water investigation are:

- Determine the potential threat to public health or the environment posed by the Site;
- Determine the potential for a release of hazardous constituents into the environment; and
- Determine the potential for placement of the Site on the National Priorities List (NPL).

Completion of the PA included reviewing existing Site information, collecting receptor information within the range of Site influence, and determining regional geology, groundwater, surface water and surrounding population. This document includes a discussion of Site background information (Section 2), a discussion of migration/exposure pathways and potential receptors (targets; Section 3) and a list of pertinent references (Section 4).

2 SITE BACKGROUND

2.1 SITE LOCATION

Site Name:	Circle Court Ground Water
CERCLIS ID No.:	TXN000606965
Location:	Parker County, Texas
Latitude:	32.745N
Longitude:	-97.678333W
Legal Description:	Lots 1 and 2, Block 3, Hillcrest Subdivision
Congressional District:	U.S. Congressional District 12
Site Owner:	City of Willow Park 516 Ranch House Road Willow Park, TX 76087 (817) 441-7108
Site Contact:	Lance Petty Director of Public Works 3500 Indian Camp Willow Park, TX 76087 (817) 441-5027

2.2 SITE DESCRIPTION

The Circle Court Ground Water site (the "Site") is located at 117 Circle Court, 100 yards north-northwest of the intersection of Circle Drive and Circle Court in Willow Park, Parker County, Texas. It lies 0.28 miles south of Interstate 20 and 0.3 mile west of FM 5 (Annetta Road) and is 6 miles east of the City of Weatherford (Fig. 2-1). In this rural residential area, single-family residences immediately surround the Site on the south, west and east sides. A 15-acre vacant wooded lot borders the Site on the north. North of the wooded lot, approximately 0.15 miles north of the Site, is a truck stop/diner. Lake Weatherford is approximately 1.75 miles north of the Site.

The main building of the Parker County Airport is 0.32 miles northwest of the Site at 3816 E. Interstate 20 in the City of Hudson Oaks, and the nearest point of the north/south-oriented airport runway is 0.22 miles west of the Site. A lawnmower repair shop is located 0.28 miles northwest of the Site, and a strip shopping center, which includes a dry cleaner facility and a gas station, is located 0.21 miles east-northeast of the Site (Figure 2-2).

The Site is designated as contaminated ground water originating from an unknown source. A volatile organic compound (VOC), trichloroethene (TCE), was first detected in concentrations above the EPA maximum contaminant limit (MCL) for drinking water of 5 micrograms per liter (µg/L) in a routine ground water sampling event conducted on March 23, 2006. Trichloroethene is a colorless or blue organic liquid with a chloroform-like odor. The greatest use of trichloroethene is to remove grease from fabricated metal parts and some textiles (Ref. 4, p. 1).

2.3 OWNERSHIP HISTORY

State Well No. 32-19-201 is the indicator and nearest well to the contaminated ground water. The well is part of the Willow Park Municipal System, which is owned and operated by the City of Willow Park. Originally, Willow Park operated a portion of the old Chico water system and a separate water system just to the east of Lake Weatherford. Over time, the incorporation of several other private well systems and city wells were included to form a large system capable of supplying new subdivisions. An upgrade involved the connection of the main system, which is east of the Clear Fork, with the Willow Springs Oaks area, west of the Clear Fork (Ref. 5, p. 10-1).

Willow Park Municipal System is registered in the Public Water Supply (PWS) Program, Identification No. 1840027. The indicator well is located at latitude 32.745N and longitude -97.678333W at the Willow Springs Oaks Pump Station, 117 Circle Court, Willow Park, Texas. The indicator well is identified by Willow Park Municipal System as Well No. 20 (TCEQ Source Code G1840027U). Texas Water Development Board Water Well data indicate that the well was drilled on 07/15/1965 to a depth of 180 feet (Ref. 6, p. 55). The indicator well is one of three active wells in the Willow Park Municipal System that were formerly registered in the PWS Program to the City of Willow Park under the Willow Springs Oaks Water System, PWS Identification No. 1840093. The two water systems were merged in 2001 (Ref. 7, p. 2). The three wells that were

formerly part of the Willow Springs Oaks Water System now provide drinking water to 114 residential connections in Pressure Plane No. 2 of the Willow Park Municipal System (Ref. 8, p. 3).

2.4 OPERATIONS AND WASTE CHARACTERISTICS

The Willow Park Municipal System currently provides drinking water to approximately 5,897 persons through 1,685 connections (Ref. 9, p. 1). Ground water is pumped from 17 operational wells through 5 pump stations to 11 points of entry (POE) in the system: Indian Camp Pump Station (POE001), located at 3500 Indian Camp; Willow Wood Pump Station (POE002), located at 3323 Forest Circle; Fox Hunt Pump Station (POE009), located at 1109 Fox Hunt Trail; Willow Springs Pump Station (POE010), located at 4820 Misty Meadow; and Willow Springs Oaks Pump Station (POE011), located at 117 Circle Court. The indicator well, Well 20, is the only well providing drinking water to the distribution system through POE011. TCE was detected at a concentration above the MCL in a routine sample collected at POE011 on March 23, 2006, and granular activated carbon (GAC) filters were installed on the well on June 19, 2006. The well was subsequently put back into service. Presently, ground water pumped from Well 20 at the Willow Spring Oaks Pump Station passes through the filters before being disinfected by hypochlorination and sent to the above-ground water storage tank for distribution (Ref. 8, pp. 2-4).

Chemical use is limited to disinfection of the raw ground water by gaseous chlorination at the Indian Camp Pump Station and by sodium hypochlorite at all other pump stations. Monitoring and recording of chlorine residual at each POE is performed by water system personnel on a daily basis (Ref. 9, p. 5).

The TCEQ Drinking Water Quality Team has set sampling requirements and sample collection schedules for each POE in the Willow Park Municipal System in addition to periodic monitoring in the distribution system. At POE011 (Sample Site 11), the following tests and sample periods are required:

a. Cyanide; 6-year
b. Minerals; triennial
c. Metals; 6-year
d. Nitrate; annual
e. Radionuclides; triennial

f. Synthetic organic compounds; triennial

g. Volatile organic compounds; annual

Samples are tested for volatile organic compounds on an annual basis at POE011 due to the past detections (Ref. 10, pp 1-3).

2.5 PREVIOUS INVESTIGATIONS

Routine Comprehensive Compliance Investigations (CCI) were conducted by TCEQ PWS personnel in 1999, 2001, 2002 and 2007. A Notice of Violation was issued on January 3, 2008 for alleged record-keeping and facility maintenance violations noted during the most recent CCI conducted on October 24, 2007. Compliance documentation was subsequently submitted to the TCEQ Region 4 office, and a Notice of Compliance was issued on September 25, 2008.

Pursuant to a request from the TCEQ, Eagle Construction and Environmental Services, L.P. (Eagle) mobilized to the City of Willow Park on June 1, 2006 to initiate sampling of select private water wells in the vicinity of Willow Park Municipal System Well 20 (State Well ID No. 32-19-201). The June 1-2, 2006 sampling event was conducted as a result of TCE detection of 33.91 µg/L, above the MCL of 5.0 µg/L, in a sample collected from POE011 on May 4, 2006 as a follow-up to the March 23, 2006 routine sample. Because of the potential emergency situation of multiple private well owners drinking contaminated groundwater, the TCEQ Field Operations Division authorized Eagle to collect and have analyzed water samples from nine (9) private water wells in the vicinity (Figure 2-3). The samples were analyzed for concentrations of VOCs by a drinking water certified laboratory utilizing drinking water methods. A review of the laboratory analytical results indicated that concentrations of TCE (above laboratory detection limits) were detected in five (5) of the samples collected from the private water wells.

2.5.1 Sample Results

Available water sample analyses data from the TCEQ Drinking Water Quality Team, Public Drinking Water Section indicate that TCE was first detected in a routine sample collected from POE010 on 10/29/2001 at a concentration of 2.4 µg/L, below the MCL of 5.0 µg/L (Table 2-1) (Ref. 11, pp 1-10). TCE was next detected in a routine sample collected from POE011 on 03/19/2002 at a concentration of 1.9 µg/L. POE010 and POE011 are interconnected by a valve located at the corner of Bankhead Road and Kingswood Road. The valve is open under normal operating procedures

(Ref. 9, p. 11). The locations of POE010, POE011 and the interconnection valve are shown in Figure 2-3. Six subsequent samplings conducted periodically at POE011 from 09/18/2002 to 03/15/2005 revealed TCE detections ranging from 1.3 µg/L to 3.4 µg/L, all below the MCL of 5 µg/L. On 03/23/2006 the routine sample at POE011 revealed a TCE concentration of 6.03 µg/L. As a result, Willow Park Municipal System voluntarily took Well 20 out of service on 4/1/2006 (Ref. 12, p. 1). Follow-up confirmation sampling directly from Well 20 was conducted on 05/04/2006 and revealed a TCE concentration of 33.9 µg/L (Ref. 13, pp. 1-5).

On 06/19/2006 the GAC filters were installed on Well 20 so that the pumped water first passes through the filters prior to disinfection by hypochlorination and being sent to the above-ground storage tank. Willow Park Municipal System personnel subsequently began voluntary periodic collection of samples for TCE concentrations before and after the GAC filters at POE011. The samples were analyzed for concentrations of VOCs by Talem, Inc., a drinking water certified laboratory, utilizing drinking water methods. The TCE concentrations after the filter at POE011 have been below the MCL. The results of the raw water and post-filter TCE concentrations from POE011 in samples collected by Willow Park Municipal System personnel are listed in Table 2.1. An anomaly exists in the sample results from the 12/05/2007 and may be due to a mislabeling of samples (Ref. 14).

Other hazardous substances have been detected in samples from POE011, as well as other POE in the Willow Park Municipal System. Table 2-2 lists historical sampling analyses results for VOCs in all POE of the Willow Park Municipal System.

Eagle mobilized to the Willow Park Municipal System on June 1, 2006 to initiate the water well sampling activities from nine (9) private wells in the vicinity of POE011. The wells sampled on June 1 and 2, along with the well owners' names and addresses, are summarized in Table 2-3. The locations of the sampled water wells are shown in Figure 2.4 (Ref. 15).

A review of the laboratory analytical results indicated that concentrations of trichloroethylene (above laboratory detection limits) were detected in several of the samples collected from the water wells, including Davis #1 (1.54 µg/L), Murphy (2.59 µg/L) Lasater #1 (4.67 µg/L); Keller (2.45 µg/L) and Barnett #2 (12.2 µg/L). Low concentrations of methylene chloride were present in all of

the samples, including the field blanks, duplicates and trip blank, and this compound is considered to be an artifact of laboratory contamination and not a constituent of concern. In addition, 1, 4-dichlorobenzene and naphthalene were detected at very low concentrations in both field blanks but were not detected in any of the well samples. For this reason, these two compounds are not considered constituents of concern (Ref. 15). A summary of the laboratory analytical results for all of the private water well samples, including quality control samples, is included in Table 2-4.

2.5.2 Sources

The Willow Springs Oaks pump station is located in a rural residential area. No potential sources of hazardous substances have been located in the immediate vicinity of POE011. A review of the laboratory analytical results and comparison of these results with the EPA primary drinking water standards indicate that the MCL for TCE was exceeded in the sample collected from the Barnett #2 well located at Parker County Airport. Concentrations of TCE below the drinking water MCL were detected in several of the samples collected from wells in the area. The distribution of this compound suggests a source area to the north-northwest of the Willow Park Municipal System's PWS Well 20 (Ref. 15).

2-1 Raw Water and Post-Filter TCE Concentrations from POE 011 Samples Collected by Willow Park Municipal System Personnel (Ref. 14)

Collected date	Raw water TCE concentration (µg/L)	Above MCL or PCL	Post-filter TCE concentration (µg/L)	Above MCL or PCL
06/19/2006(first sample using filters)	6.8	Y	<2.0	N
06/26/2006	6.1	Y	<2.0	N
07/06/2006	5.2	Y	<2.0	N
08/02/2006	2.2	N	<2.0	N
09/06/2006	3.9	N	<2.0	N
10/05/2006	5.4	Y	<2.0	N
11/02/2006	5.7	Y	<2.0	N
12/05/2006	5.4	Y	<2.0	N
01/26/2007	4.7	N	<2.0	N
02/6/2007	3.5	N	<2.0	N
03/06/2007	3.3	N	<2.0	N
04/04/2007	5.0	N	<2.0	N
05/02/2007	3.1	N	<2.0	N
09/05/2007	5.2	Y	<0.19	N
09/14/2007	4.6	N	<0.19	N
10/03/2007	4.5	N	<0.19	N
11/07/2007	1.4	N	<0.19	N
12/05/2007	<0.19	N	4.6	N
01/03/2008	4.5	N	<0.19	N
02/06/2008	5.6	Y	<0.19	N
03/06/2008	5.7	Y	<0.19	N

2-2 Historical Sampling Analyses Results for Volatile Organic Compounds (Ref. 11)

POE	Contaminants	Collection date	Concentration (µg/L)	Above MCL
POE001	Bromodichloromethane	02/09/1999	2.30	
	Bromoform		4.7	
	Chloroform		0.7	
	Dibromochloromethane		6.1	
	Bromodichloromethane	03/08/1999	1.2	
	Bromoform		3.2	
	Dibromochloromethane		4.1	
	Bromodichloromethane	11/07/2000	1.4	
	Bromoform		6.9	
	Dibromochloromethane		4.9	
	Bromodichloromethane	03/19/2002	1.7	
	Bromoform		3.3	
	Dibromochloromethane		3.4	
POE002	Bromodichloromethane	03/08/1999	1.2	
	Bromoform		3.2	
	Dibromochloromethane		3.5	
	Bromodichloromethane	11/07/2000	3.7	
	Bromoform		20	
	Chloroform		1.0	
	Dibromochloromethane		11	
POE004	2-Butanone	03/25/1996	74	
	Tetrahydrofuran		41.0	
	Chloroform	11/07/2000	1.1	
POE006	Chloroform	11/07/2000	0.5	
POE008	Dichloromethane	05/30/1996	2.7	
	Bromodichloromethane	03/19/2002	3.2	

	Bromoform		0.6	
	Chloroform		3.6	
	Dibromochloromethane		2.2	
POE009	Dibromochloromethane	11/11/2004	0.6	
POE010	Chloroform	10/29/2001	0.5	
	Trichloroethene		2.4	
	2-Butanone(MEK)	05/22/2002	37	
	Bromodichloromethane		9.7	
	Bromoform		0.9	
	Carbon Tetrachloride		1.0	
	Chloroform		19	
	Dibromochloromethane		5.0	
	Tetrahydrofuran		12	
	2-Furancarboxaldehyde	09/18/2002	1.1	
	Bromodichloromethane		10	
	Bromoform		0.7	
	Chloroform		18	
	Dibromochloromethane		5.4	
	Bromodichloromethane	11/19/2002	1.4	
	Chloroform		1.0	
	Dibromochloromethane		1.2	
	Bromodichloromethane	03/25/2003	1.1	
	Chloroform		0.9	
	Dibromochloromethane		0.8	
	Chloroform	03/15/2005	1.1	
	Dibromochloromethane		1.2	
	Dichlorobromomethane		1.4	
	Bromodichloromethane	03/23/2006	1.38	
	Dibromochloromethane		1.48	

	Bromodichloromethane	02/22/2007	0.8	
	Chloroform		0.6	
	Dibromochloromethane		0.9	
POE011	Chloroform	10/29/2001	0.8	
	Chloroform	03/19/2002	0.7	
	Dibromochloromethane		0.6	
	Trichloroethene		1.9	
	Bromodichloromethane	09/18/2002	1.3	
	Chloroform		2.6	
	Dibromochloromethane		0.6	
	Trichloroethene		1.8	
	Bromodichloromethane	11/19/2002	1.8	
	Chloroform		2.1	
	Dibromochloromethane		1.2	
	Trichloroethene		1.9	
	Bromodichloromethane	03/25/2003	1.7	
	Chloroform		1.3	
	Dibromochloromethane		1.3	
	Trichloroethene		1.3	
	Bromoform	11/11/2004	1.5	
	Chloroform		1.1	
	Dibromochloromethane		3.1	
	Dichlorobromomethane		2.1	
	Trichloroethene		3.4	
	Bromoform	03/15/2005	1.2	
	Chloroform		0.8	
	Dibromochloromethane		2.4	

	Dichlorobromomethane		1.6	
	Trichloroethene		2.8	
	Bromodichloromethane	03/23/2006	2.95	
	Bromoform		2.36	
	Chloroform		1.68	
	Dibromochloromethane		4.46	
	Trichloroethene		6.03	Y
	Acetone	05/04/2006	7.84	
	Bromodichloromethane	02/22/2007	0.6	
	Chloroform		0.5	
	Dibromochloromethane		0.9	
	Isopropyl alcohol	09/17/2008	3.9	
Well 20 at POE011	Trichloroethene	03/25/2003	2.0	Y
Well 20 at POE 011	Trichloroethene	05/04/2006	33.9	Y

2-3 Private Wells Sampled June 1-2, 2006 (Ref. 15)

Well ID	Depth of Well (ft.)	Owner	Owner Address	Phone Number	Access Agreement	Number of Well (s)
1	240-300	Perry J. Davis	550 Russell Road, Weatherford, TX 76087	817/613-8854	Y	2
2		Sharon Lasater	546 Russell Road, Weatherford, TX 76087	817/613-1196	Y	2
3	261	Vinita J. Hall	503 Russell Road, Willow Park, TX 76087	817/596-5915	Y	1
4	250	George Murphy	108 E. Circle Drive, Weatherford, TX 76087	817/596-0476	Y	1
5		Dennis Sherman	300 Russell Road, Weatherford, TX 76087	817/596-5957	Y	1
6	300	Guy Keller	110 Circle Drive, Willow Park, TX 76087	817/594-8539	Y	1
7	240	Gearld Liepert	408 Deer Pond Drive, Willow Park, TX 76087	817/599-3503	Y	1
8	200	Kelley Barnett	3816 East I-20, Weatherford, TX 76087	817/599-7772	Y	1
9	200	Kelley Barnett	3816 East I-20, Weatherford, TX 76087	817/599-7772	Y	1

2-4 Summary of Groundwater and QA/QC Laboratory Analytical Results of Private Well Sampling

	Analyte	Davis #1 Lab ID 266929-001 Sampled 6-1-06	Hall Lab ID 266929-002 Sampled 6-1-06	Sherman Lab ID 266929-003 Sampled 6-1-06	Murphy Lab ID 266929-004 Sampled 6-1-06	Lasater #1 Lab ID 266929-005 Sampled 6-1-06	Tier 1 Residential Groundwater PCLs[1]	Primary Drinking Water Standard (ug/L)
Volatile Organic Compounds EPA Method 524.2 (ug/L)	Benzene	<1.00	<1.00	<1.00	<1.00	<1.00	5.0	5.0
	Bromobenzene	<1.00	<1.00	<1.00	<1.00	<1.00	490	-
	Bromochloromethane	<1.00	<1.00	<1.00	<1.00	<1.00	980	-
	Bromodichloromethane	<1.00	<1.00	<1.00	<1.00	<1.00	15	-
	Bromoform	<1.00	<1.00	<1.00	<1.00	<1.00	120	-
	Methyl bromide	<1.00	<1.00	<1.00	<1.00	<1.00	34	-
	tert-Butylbenzene	<1.00	<1.00	<1.00	<1.00	<1.00	980	-
	Sec-Butylbenzene	<1.00	<1.00	<1.00	<1.00	<1.00	980	-
	n-Butylbenzene	<1.00	<1.00	<1.00	<1.00	<1.00	980	-
	Carbon Tetrachloride	<1.00	<1.00	<1.00	<1.00	<1.00	5.0	5.0
	Chlorobenzene	<1.00	<1.00	<1.00	<1.00	<1.00	100	-
	Chloroethane	<1.00	<1.00	<1.00	<1.00	<1.00	9800	-
	Chloroform	<1.00	<1.00	<1.00	<1.00	<1.00	240	-
	Methyl Chloride	<1.00	<1.00	<1.00	<1.00	<1.00	5.0	-
	2-Chlorotoluene	<1.00	<1.00	<1.00	<1.00	<1.00	490	-
	4-Chlorotoluene	<1.00	<1.00	<1.00	<1.00	<1.00	490	-
	1,2-Dibromo-3-Chloropropane	<1.00	<1.00	<1.00	<1.00	<1.00	0.20	-
	Dibromochloromethane	<1.00	<1.00	<1.00	<1.00	<1.00	11	-
	1,2-Dibromoethane	<1.00	<1.00	<1.00	<1.00	<1.00	0.050	-
	Methylene bromide	<1.00	<1.00	<1.00	<1.00	<1.00	34	-
	1,2-Dichlorobenzene	<1.00	<1.00	<1.00	<1.00	<1.00	600	-
	1,3-Dichlorobenzene	<1.00	<1.00	<1.00	<1.00	<1.00	730	-
	1,4-Dichlorobenzene	<1.00	<1.00	<1.00	<1.00	<1.00	75	-
	Dichlorodifluoromethane	<1.00	<1.00	<1.00	<1.00	<1.00	4900	-
	1,1-Dichloroethane	<1.00	<1.00	<1.00	<1.00	<1.00	2400	-
	1,2-Dichloroethane	<1.00	<1.00	<1.00	<1.00	<1.00	5.0	5.0
	cis-1,2-Dichloroethylene	<1.00	<1.00	<1.00	<1.00	<1.00	5.0	70
	trans-1,2-dichloroethylene	<1.00	<1.00	<1.00	<1.00	<1.00	100	100
	1,1-Dichloroethylene	<1.00	<1.00	<1.00	<1.00	<1.00	7.0	7.0
	1,2-Dichloropropane	<1.00	<1.00	<1.00	<1.00	<1.00	5.0	5.0
	1,3-Dichloropropane	<1.00	<1.00	<1.00	<1.00	<1.00	9.1	-
	2,2-Dichloropropane	<1.00	<1.00	<1.00	<1.00	<1.00	13	-
	1,1-Dichloropropene	<1.00	<1.00	<1.00	<1.00	<1.00	9.1	-
	cis-1,3-Dichloropropene	<1.00	<1.00	<1.00	<1.00	<1.00	1.7	-
	trans-1,3-dichloropropene	<1.00	<1.00	<1.00	<1.00	<1.00	9.1	-
	Ethylbenzene	<1.00	<1.00	<1.00	<1.00	<1.00	700	700
	Hexachlorobutadiene	<1.00	<1.00	<1.00	<1.00	<1.00	4.9	-
	isopropylbenzene	<1.00	<1.00	<1.00	<1.00	<1.00	2400	-
	p-Cymene (p-Isopropyltoluene)	<1.00	<1.00	<1.00	<1.00	<1.00	2400	-
	Methylene Chloride	**0.650 J**	**0.440 J**	**0.630 J**	**0.490 J**	**0.560 J**	5.0	-
	Naphthalene	<1.00	<1.00	<1.00	<1.00	<1.00	490	-
	n-Propylbenzene	<1.00	<1.00	<1.00	<1.00	<1.00	980	-
	Styrene	<1.00	<1.00	<1.00	<1.00	<1.00	100	100
	1,1,1,2-Tetrachloroethane	<1.00	<1.00	<1.00	<1.00	<1.00	35	-
	1,1,2,2-Tetrachloroethane	<1.00	<1.00	<1.00	<1.00	<1.00	4.6	-
	Tetrachloroethylene	<1.00	<1.00	<1.00	<1.00	<1.00	5.0	5.0
	Toluene	<1.00	<1.00	<1.00	<1.00	<1.00	1000	1000
	1,2,3-Trichlorobenzene	<1.00	<1.00	<1.00	<1.00	<1.00	73	-
	1,2,4-Trichlorobenzene	<1.00	<1.00	<1.00	<1.00	<1.00	70	70
	1,1,1-Trichloroethane	<1.00	<1.00	<1.00	<1.00	<1.00	200	200
	1,1,2-Trichloroethane	<1.00	<1.00	<1.00	<1.00	<1.00	5.0	5.0
	Trichloroethylene	**1.54**	<1.00	<1.00	**2.59**	**4.67**	5.0	5.0
	Trichlorofluoromethane	<1.00	<1.00	<1.00	<1.00	<1.00	7300	-
	1,2,3-Trichloropropane	<1.00	<1.00	<1.00	<1.00	<1.00	0.13	-
	1,2,4-Trimethylbenzene	<1.00	<1.00	<1.00	<1.00	<1.00	1200	-
	1,3,5-Trimethylbenzene	<1.00	<1.00	<1.00	<1.00	<1.00	1200	-
	Vinyl Chloride	<1.00	<1.00	<1.00	<1.00	<1.00	2.0	2.0
	o-Xylene	<1.00	<1.00	<1.00	<1.00	<1.00	10000	10000
	m,p-Xylenes	<2.00	<2.00	<2.00	<2.00	<2.00	10000	10000

**

	Analyte	Dup-1 Lab ID 266929-006 Sampled 6-1-06	Field Blank Lab ID 266929-007 Sampled 6-1-06	Trip Blank Lab ID 266929-008 Sampled 6-1-06	Keller Lab ID 267000-001 Sampled 6-2-06	Liepert Lab ID 267000-002 Sampled 6-2-06	Tier 1 Residential Groundwater PCLs[1]	Primary Drinking Water Standard (ug/L)
Volatile Organic Compounds EPA Method 524.2 (ug/L)	Benzene	<1.00	<1.00	<1.00	<1.00	<1.00	5.0	5.0
	Bromobenzene	<1.00	<1.00	<1.00	<1.00	<1.00	490	-
	Bromochloromethane	<1.00	<1.00	<1.00	<1.00	<1.00	980	-
	Bromodichloromethane	<1.00	<1.00	<1.00	<1.00	<1.00	15	-
	Bromoform	<1.00	<1.00	<1.00	<1.00	<1.00	120	-
	Methyl bromide	<1.00	<1.00	<1.00	<1.00	<1.00	34	-
	tert-Butylbenzene	<1.00	<1.00	<1.00	<1.00	<1.00	980	-
	Sec-Butylbenzene	<1.00	<1.00	<1.00	<1.00	<1.00	980	-
	n-Butylbenzene	<1.00	<1.00	<1.00	<1.00	<1.00	980	-
	Carbon Tetrachloride	<1.00	<1.00	<1.00	<1.00	<1.00	5.0	5.0
	Chlorobenzene	<1.00	<1.00	<1.00	<1.00	<1.00	100	-
	Chloroethane	<1.00	<1.00	<1.00	<1.00	<1.00	9800	-
	Chloroform	<1.00	<1.00	<1.00	<1.00	<1.00	240	-
	Methyl Chloride	<1.00	<1.00	<1.00	<1.00	<1.00	5.0	-
	2-Chlorotoluene	<1.00	<1.00	<1.00	<1.00	<1.00	490	-
	4-Chlorotoluene	<1.00	<1.00	<1.00	<1.00	<1.00	490	-
	1,2-Dibromo-3-Chloropropane	<1.00	<1.00	<1.00	<1.00	<1.00	0.20	-
	Dibromochloromethane	<1.00	<1.00	<1.00	<1.00	<1.00	11	-
	1,2-Dibromoethane	<1.00	<1.00	<1.00	<1.00	<1.00	0.050	-
	Methylene bromide	<1.00	<1.00	<1.00	<1.00	<1.00	34	-
	1,2-Dichlorobenzene	<1.00	<1.00	<1.00	<1.00	<1.00	600	-
	1,3-Dichlorobenzene	<1.00	<1.00	<1.00	<1.00	<1.00	730	-
	1,4-Dichlorobenzene	<1.00	**1.55**	<1.00	<1.00	<1.00	75	-
	Dichlorodifluoromethane	<1.00	<1.00	<1.00	<1.00	<1.00	4900	-
	1,1-Dichloroethane	<1.00	<1.00	<1.00	<1.00	<1.00	2400	-
	1,2-Dichloroethane	<1.00	<1.00	<1.00	<1.00	<1.00	5.0	5.0
	cis-1,2-Dichloroethylene	<1.00	<1.00	<1.00	<1.00	<1.00	5.0	70
	trans-1,2-dichloroethylene	<1.00	<1.00	<1.00	<1.00	<1.00	100	100
	1,1-Dichloroethylene	<1.00	<1.00	<1.00	<1.00	<1.00	7.0	7.0
	1,2-Dichloropropane	<1.00	<1.00	<1.00	<1.00	<1.00	5.0	5.0
	1,3-Dichloropropane	<1.00	<1.00	<1.00	<1.00	<1.00	9.1	-
	2,2-Dichloropropane	<1.00	<1.00	<1.00	<1.00	<1.00	13	-
	1,1-Dichloropropene	<1.00	<1.00	<1.00	<1.00	<1.00	9.1	-
	cis-1,3-Dichloropropene	<1.00	<1.00	<1.00	<1.00	<1.00	1.7	-
	trans-1,3-dichloropropene	<1.00	<1.00	<1.00	<1.00	<1.00	9.1	-
	Ethylbenzene	<1.00	<1.00	<1.00	<1.00	<1.00	700	700
	Hexachlorobutadiene	<1.00	<1.00	<1.00	<1.00	<1.00	4.9	-
	isopropylbenzene	<1.00	<1.00	<1.00	<1.00	<1.00	2400	-
	p-Cymene (p-Isopropyltoluene)	<1.00	<1.00	<1.00	<1.00	<1.00	2400	-
	Methylene Chloride	**0.640 J**	**0.520 J**	**4.00**	**0.590 J**	**0.790 J**	5.0	-
	Naphthalene	<1.00	**0.200 J**	<1.00	<1.00	<1.00	490	-
	n-Propylbenzene	<1.00	<1.00	<1.00	<1.00	<1.00	980	-
	Styrene	<1.00	<1.00	<1.00	<1.00	<1.00	100	100
	1,1,1,2-Tetrachloroethane	<1.00	<1.00	<1.00	<1.00	<1.00	35	-
	1,1,2,2-Tetrachloroethane	<1.00	<1.00	<1.00	<1.00	<1.00	4.6	-
	Tetrachloroethylene	<1.00	<1.00	<1.00	<1.00	<1.00	5.0	5.0
	Toluene	<1.00	<1.00	<1.00	<1.00	<1.00	1000	1000
	1,2,3-Trichlorobenzene	<1.00	<1.00	<1.00	<1.00	<1.00	73	-
	1,2,4-Trichlorobenzene	<1.00	<1.00	<1.00	<1.00	<1.00	70	70
	1,1,1-Trichloroethane	<1.00	<1.00	<1.00	<1.00	<1.00	200	200
	1,1,2-Trichloroethane	<1.00	<1.00	<1.00	<1.00	<1.00	5.0	5.0
	Trichloroethylene	<1.00	<1.00	<1.00	**2.45**	<1.00	5.0	5.0
	Trichlorofluoromethane	<1.00	<1.00	<1.00	<1.00	<1.00	7300	-
	1,2,3-Trichloropropane	<1.00	<1.00	<1.00	<1.00	<1.00	0.13	-
	1,2,4-Trimethylbenzene	<1.00	<1.00	<1.00	<1.00	<1.00	1200	-
	1,3,5-Trimethylbenzene	<1.00	<1.00	<1.00	<1.00	<1.00	1200	-
	Vinyl Chloride	<1.00	<1.00	<1.00	<1.00	<1.00	2.0	2.0
	o-Xylene	<1.00	<1.00	<1.00	<1.00	<1.00	10000	10000
	m,p-Xylenes	<2.00	<2.00	<2.00	<2.00	<2.00	10000	10000

	Analyte	Barnett #1 Lab ID 267000-003 Sampled 6-2-06	Barnett #2 Lab ID 267000-004 Sampled 6-2-06	Dup-2 Lab ID 267000-005 Sampled 6-2-06	Field Blank Lab ID 267000-006 Sampled 6-2-06	Effluent #2 Lab ID 267002-001 Sampled 6-2-06	Tier 1 Residential Groundwater PCLs[1]	Primary Drinking Water Standard (ug/L)
Volatile Organic Compounds EPA Method 524.2 (ug/L)	Benzene	<1.00	<1.00	<1.00	<1.00	<1.00	5.0	5.0
	Bromobenzene	<1.00	<1.00	<1.00	<1.00	<1.00	490	-
	Bromochloromethane	<1.00	<1.00	<1.00	<1.00	<1.00	980	-
	Bromodichloromethane	<1.00	<1.00	<1.00	<1.00	<1.00	15	-
	Bromoform	<1.00	<1.00	<1.00	<1.00	<1.00	120	-
	Methyl bromide	<1.00	<1.00	<1.00	<1.00	<1.00	34	-
	tert-Butylbenzene	<1.00	<1.00	<1.00	<1.00	<1.00	980	-
	Sec-Butylbenzene	<1.00	<1.00	<1.00	<1.00	<1.00	980	-
	n-Butylbenzene	<1.00	<1.00	<1.00	<1.00	<1.00	980	-
	Carbon Tetrachloride	<1.00	<1.00	<1.00	<1.00	<1.00	5.0	5.0
	Chlorobenzene	<1.00	<1.00	<1.00	<1.00	<1.00	100	-
	Chloroethane	<1.00	<1.00	<1.00	<1.00	<1.00	9800	-
	Chloroform	<1.00	<1.00	<1.00	<1.00	<1.00	240	-
	Methyl Chloride	<1.00	<1.00	<1.00	<1.00	<1.00	5.0	-
	2-Chlorotoluene	<1.00	<1.00	<1.00	<1.00	<1.00	490	-
	4-Chlorotoluene	<1.00	<1.00	<1.00	<1.00	<1.00	490	-
	1,2-Dibromo-3-Chloropropane	<1.00	<1.00	<1.00	<1.00	<1.00	0.20	-
	Dibromochloromethane	<1.00	<1.00	<1.00	<1.00	<1.00	11	-
	1,2-Dibromoethane	<1.00	<1.00	<1.00	<1.00	<1.00	0.050	-
	Methylene bromide	<1.00	<1.00	<1.00	<1.00	<1.00	34	-
	1,2-Dichlorobenzene	<1.00	<1.00	<1.00	<1.00	<1.00	600	-
	1,3-Dichlorobenzene	<1.00	<1.00	<1.00	<1.00	<1.00	730	-
	1,4-Dichlorobenzene	<1.00	<1.00	<1.00	**1.60**	<1.00	75	-
	Dichlorodifluoromethane	<1.00	<1.00	<1.00	<1.00	<1.00	4900	-
	1,1-Dichloroethane	<1.00	<1.00	<1.00	<1.00	<1.00	2400	-
	1,2-Dichloroethane	<1.00	<1.00	<1.00	<1.00	<1.00	5.0	5.0
	cis-1,2-Dichloroethylene	<1.00	<1.00	<1.00	<1.00	<1.00	5.0	70
	trans-1,2-dichloroethylene	<1.00	<1.00	<1.00	<1.00	<1.00	100	100
	1,1-Dichloroethylene	<1.00	<1.00	<1.00	<1.00	<1.00	7.0	7.0
	1,2-Dichloropropane	<1.00	<1.00	<1.00	<1.00	<1.00	5.0	5.0
	1,3-Dichloropropane	<1.00	<1.00	<1.00	<1.00	<1.00	9.1	-
	2,2-Dichloropropane	<1.00	<1.00	<1.00	<1.00	<1.00	13	-
	1,1-Dichloropropene	<1.00	<1.00	<1.00	<1.00	<1.00	9.1	-
	cis-1,3-Dichloropropene	<1.00	<1.00	<1.00	<1.00	<1.00	1.7	-
	trans-1,3-dichloropropene	<1.00	<1.00	<1.00	<1.00	<1.00	9.1	-
	Ethylbenzene	<1.00	<1.00	<1.00	<1.00	<1.00	700	700
	Hexachlorobutadiene	<1.00	<1.00	<1.00	<1.00	<1.00	4.9	-
	Isopropylbenzene	<1.00	<1.00	<1.00	<1.00	<1.00	2400	-
	p-Cymene (p-Isopropyltoluene)	<1.00	<1.00	<1.00	<1.00	<1.00	2400	-
	Methylene Chloride	**0.760 J**	**0.610 J**	**0.820 J**	**0.490 J**	<2.00	5.0	-
	Naphthalene	<1.00	<1.00	<1.00	**0.200 J**	<1.00	490	-
	n-Propylbenzene	<1.00	<1.00	<1.00	<1.00	<1.00	980	-
	Styrene	<1.00	<1.00	<1.00	<1.00	<1.00	100	100
	1,1,1,2-Tetrachloroethane	<1.00	<1.00	<1.00	<1.00	<1.00	35	-
	1;1,2,2-Tetrachloroethane	<1.00	<1.00	<1.00	<1.00	<1.00	4.6	-
	Tetrachloroethylene	<1.00	<1.00	<1.00	<1.00	<1.00	5.0	5.0
	Toluene	<1.00	<1.00	<1.00	<1.00	<1.00	1000	1000
	1,2,3-Trichlorobenzene	<1.00	<1.00	<1.00	<1.00	<1.00	73	-
	1,2,4-Trichlorobenzene	<1.00	<1.00	<1.00	<1.00	<1.00	70	70
	1,1,1-Trichloroethane	<1.00	<1.00	<1.00	<1.00	<1.00	200	200
	1,1,2-Trichloroethane	<1.00	<1.00	<1.00	<1.00	<1.00	5.0	5.0
	Trichloroethylene	<1.00	**12.2**	<1.00	<1.00	<1.00	5.0	5.0
	Trichlorofluoromethane	<1.00	<1.00	<1.00	<1.00	<1.00	7300	-
	1,2,3-Trichloropropane	<1.00	<1.00	<1.00	<1.00	<1.00	0.13	-
	1,2,4-Trimethylbenzene	<1.00	<1.00	<1.00	<1.00	<1.00	1200	-
	1,3,5-Trimethylbenzene	<1.00	<1.00	<1.00	<1.00	<1.00	1200	-
	Vinyl Chloride	<1.00	<1.00	<1.00	<1.00	<1.00	2.0	2.0
	o-Xylene	<1.00	<1.00	<1.00	<1.00	<1.00	10000	10000
	m,p-Xylenes	<2.00	<2.00	<2.00	<2.00	<2.00	10000	10000

Figure 2-1 Site Location Map

TCEQ

N

SOURCE - The base data used are the Parker County, Texas National Agriculture Imagery Program (NAIP). This NAIP was obtained from the Texas Natural Resource Information System (TNRIS) at www.tnris.state.tx.us. No attempt has been made to alter or correct any data in this NAIP. NAD 1983 UTM Zone 14N.

Circle Court Ground Water
Parker County, Texas
TXN000606965

Figure 2-2 Site Vicinity Map

TCEQ

N

SOURCE - The base data used are the Parker County, Texas National Agriculture Imagery Program (NAIP). This NAIP was obtained from the Texas Natural Resource Information System (TNRIS) at www.tnris.state.tx.us. No attempt has been made to alter or correct any data in this NAIP. NAD 1983 UTM Zone 14N.

Circle Court Ground Water
Parker County, Texas
TXN000606965

Figure 2-3 Locations of POE010, POE011 and Interconnection Valve

TCEQ

N

SOURCE - The base data used are the Parker County, Texas National Agriculture Imagery Program (NAIP). This NAIP was obtained from the Texas Natural Resource Information System (TNRIS) at www.tnris.state.tx.us. No attempt has been made to alter or correct any data in this NAIP. NAD 1983 UTM Zone 14N.

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Figure 2-4 Locations of Private Water Wells Sampled June 1-2, 2006 (Ref. 15)

Eagle Construction and Environmental Services, L.P. 9204 NW Hwy 287 Fort Worth, TX 76131	**Date: 6/6/06** **Project No. 02-64-0019**	**Figure 1** **Location of Private Water Wells** **TCEQ-Willow Park** **Willow Park, Texas**	N

3 MIGRATION/EXPOSURE PATHWAYS

The following sections describe migration/exposure pathways and potential targets within the Site's range of influence (Figure 3-1).

3.1 GROUNDWATER MIGRATION PATHWAY

The target distance limit (TDL) for the groundwater migration pathway is a 4-mile radius that extends from the indicator well. Figure 3-1 depicts the groundwater 4-mile TDL.

3.1.1 Soils

According to the Soil Survey of Parker County, Texas (1977), the Site is located on the Brackett and Maloterre soils, 3 to 12 percent slopes, gently sloping to strongly sloping soils on upland ridges (Ref. 16). The average composition of the soils is 50 percent Brackett soil, 22 percent Maloterre soil and 28 percent soils of minor extent, but composition is variable. Brackett soils are along side slopes and usually have a slope of 5 to 12 percent (Ref. 16, p. 16). In a representative profile of a Brackett soil, the surface layer is calcareous clay loam approximately 4 inches thick. The next 10 inches is calcareous loam. The underlying material is weakly cemented limestone and calcareous clay loam (Ref. 16, p. 15). It is as much as 35 percent limestone gravel, cobbles and fossil fragments. Maloterre soils, where present, are along the more nearly level ridgetops and usually have a slope of 3 to 5 percent. The surface layer of grayish-brown gravelly clay loam is about 8 inches thick. The underlying material is indurated limestone that contains many fossil shells (Ref. 16, p. 16).

3.1.2 Geologic Setting

The Site is located in the Western Cross Timbers region of Texas, on the western margin of the Grand Prairie (Ref. 17). In this vicinity, the Grand Prairie is underlain by alternating limestones and marls of the Fredericksburg Group. The intervening marls form low escarpments that connect successive uplands and produce a "cuesta" topography. The surfaces of the terraces slope gently

eastward (Ref. 18, p. 4, 14). The Fredericksburg Group of the Comanche Series consists predominantly of limestone, shale, clay, and marl and yields only small amounts of water to localized areas (Ref. 18, p. 10). In Parker County, the Fredericksburg Group is comprised of the Goodland Formation and Walnut Clay (or Walnut) Formation (Ref. 19, pp. 2-19). The Site and indicator well are located on the Walnut Clay Formation (Fig. 2-5). The Walnut Clay consists of clay and limestone, about equally abundant, with a thickness of approximately 30 ft. (Ref. 20, p. 5). In the Site area, the Walnut Clay overlies the Trinity Group, a water-bearing formation of Cretaceous age (Ref. 19, pp. 2-15, 2-19).

3.1.3 Aquifer System

The Trinity Group is the principal water-bearing group of rocks in the region and is divided into the Paluxy, Glen Rose, Twin Mountains, and Antlers Formations (Ref. 18, p. 10). The indicator well is in the Paluxy Formation of the Trinity Group (Ref. 6, p. 55). The Paluxy Formation is the upper member of the Trinity Group south of the Glen Rose pinch-out and forms the surface of the Western Cross Timbers belt. The dip is easterly at an average rate of 30 feet per mile (5.7 m/km) near the outcrop, increasing to 80 feet per mile (15.2 m/km) near the downdip limit of fresh to slightly saline water (Ref. 18, p.14). The thickness of the Paluxy in the general area of the Site is approximately 95-105 feet (Ref. 20, p. 5).

The Paluxy is composed predominantly of fine- to coarse-grained, friable, homogeneous, white quartz sand interbedded with sandy, silty, calcareous, or waxy clay and shale. In general, coarse-grained sand is in the lower part. The Paluxy grades upward into fine-grained sand with variable amounts of shale and clay. The sands are usually well sorted, poorly cemented, and cross-bedded (Ref. 18, p.14). The Paluxy is capable of yielding small to moderate amounts of water (Ref. 18, p. 10).

The majority of the Paluxy outcrop occurs in Hood, Parker, Tarrant, and Wise Counties and occupies approximately 650 square miles. The primary source of recharge to the Paluxy is precipitation on the outcrop. Secondary sources include recharge from streams flowing across the outcrop and surface-water seepage from lakes. The average annual precipitation on the outcrop is approximately 31 inches. Only a small fraction of the amount is available as effective recharge since there is much runoff and evapotranspiration. Water in the outcrop area is under water-table conditions, and water levels remain fairly constant with only normal seasonal fluctuations. In

downdip areas, water is under artesian conditions and is confined under hydrostatic pressure from overlying formations. The average rate of movement of water in the Paluxy amounts to less than 2 feet per year in an easterly direction except in downdip areas of heavy pumpage, where cones of depression have occurred and movement is towards the center of the pumped wells. Water-level measurements indicate the hydraulic gradient is approximately 27 feet per mile (Ref. 18, p. 39).

3.1.4 Drinking Water Receptors

Based on the 2000 U.S. census, the North Central Texas Council of Governments (NCTCOG) estimates that approximately 11,309 persons per live within a 4-mile radius of the Site (Ref. 21, p. 1). However, the NCTCOG has also estimated that the population of Parker County has grown from 88,495 in 2000 to 120,300 in 2008, an increase of nearly 36% (Ref. 22, p. 3).

Well water uses within the 4-mile target distance limit (TDL) include public water supply, domestic, irrigation, commercial, stock or livestock and miscellaneous uses. A search of the TCEQ water well database revealed 61 public water supply wells within the 4-mile TDL (Ref. 23, pp. 1-4). The number of persons served by the public water supply wells is unknown. The Texas Department of Licensing and Regulation database identifies approximately 360 domestic wells within the 4-mile TDL (Ref. 24) (Fig. 3-3). Based on NCTCOG's estimate of 2.82 persons per household within a 4-mile radius of the Site, the total number of persons utilizing domestic wells is 1,016 (Ref. 21, p. 1).

No wetland acreage is located within a 4-mile radius of the Site. It is unknown whether the Site is within a TCEQ Source Water Protection Program area (formerly the Wellhead Protection Program).

3.2 SURFACE WATER MIGRATION PATHWAY

The Surface Water Exposure Pathway will not be evaluated since the Site has been identified as contaminated ground water with no identified source.

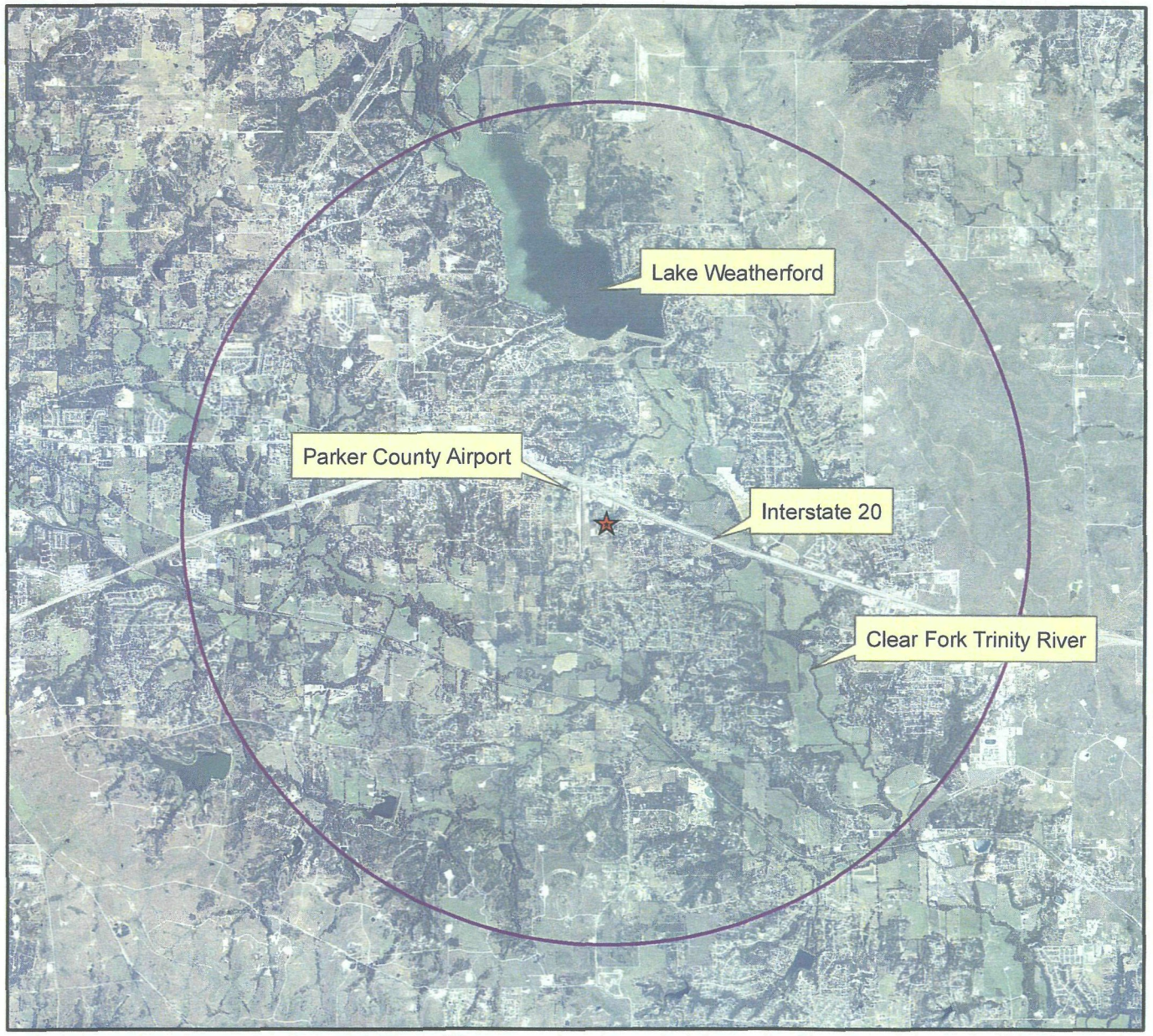
3.3 SOIL EXPOSURE PATHWAY

The Soil Exposure Pathway will not be evaluated since the Site has been identified as contaminated ground water with no identified source.

3.4 AIR EXPOSURE PATHWAY

The Air Exposure Pathway will not be evaluated since the Site has been identified as contaminated ground water with no identified source.

Figure 3-1 4-Mile Radius Map



TCEQ

N

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Site

4-Mile Radius

Figure 3-2 Population Within 4-mile Radius (Ref. 21)

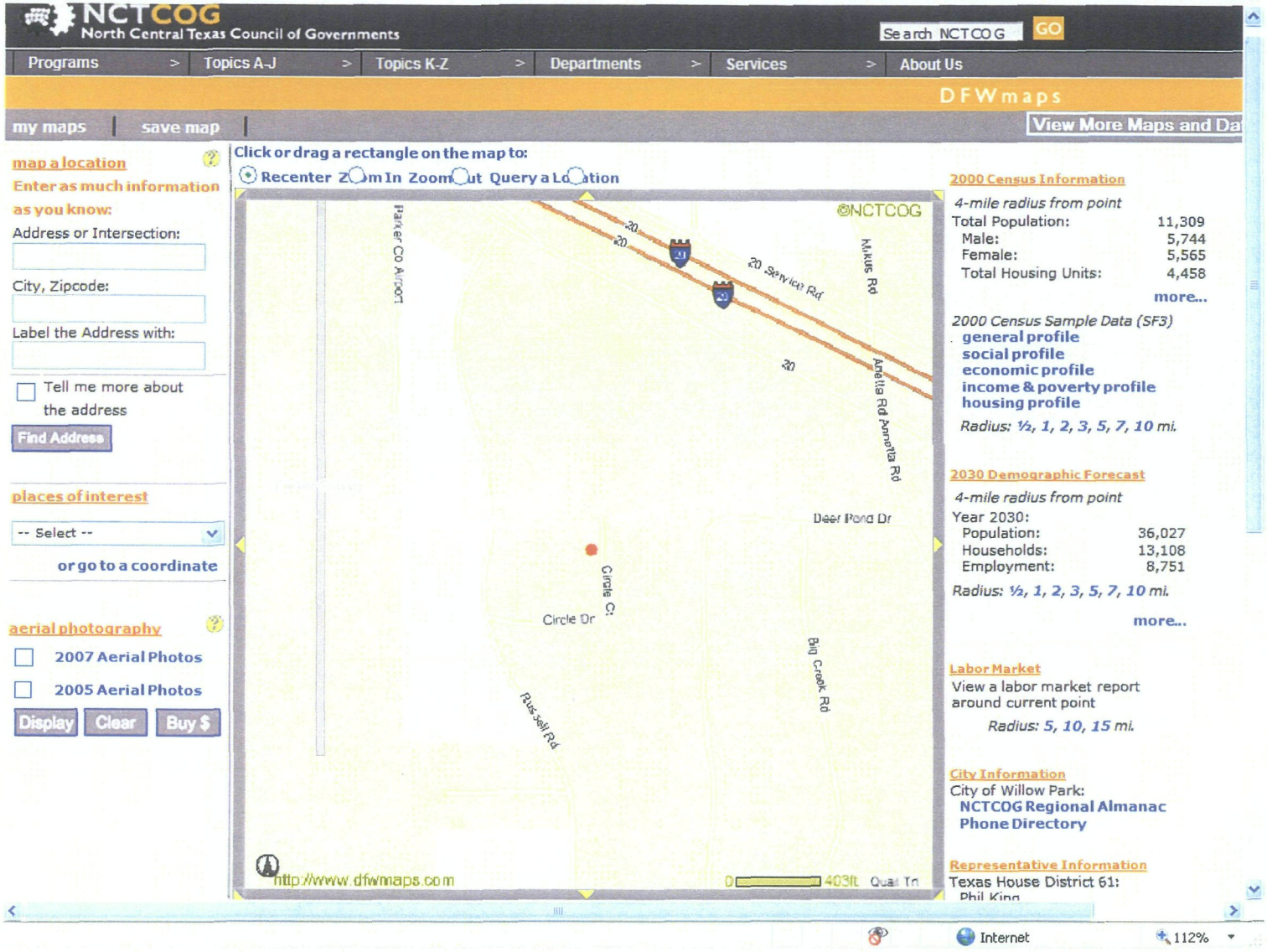
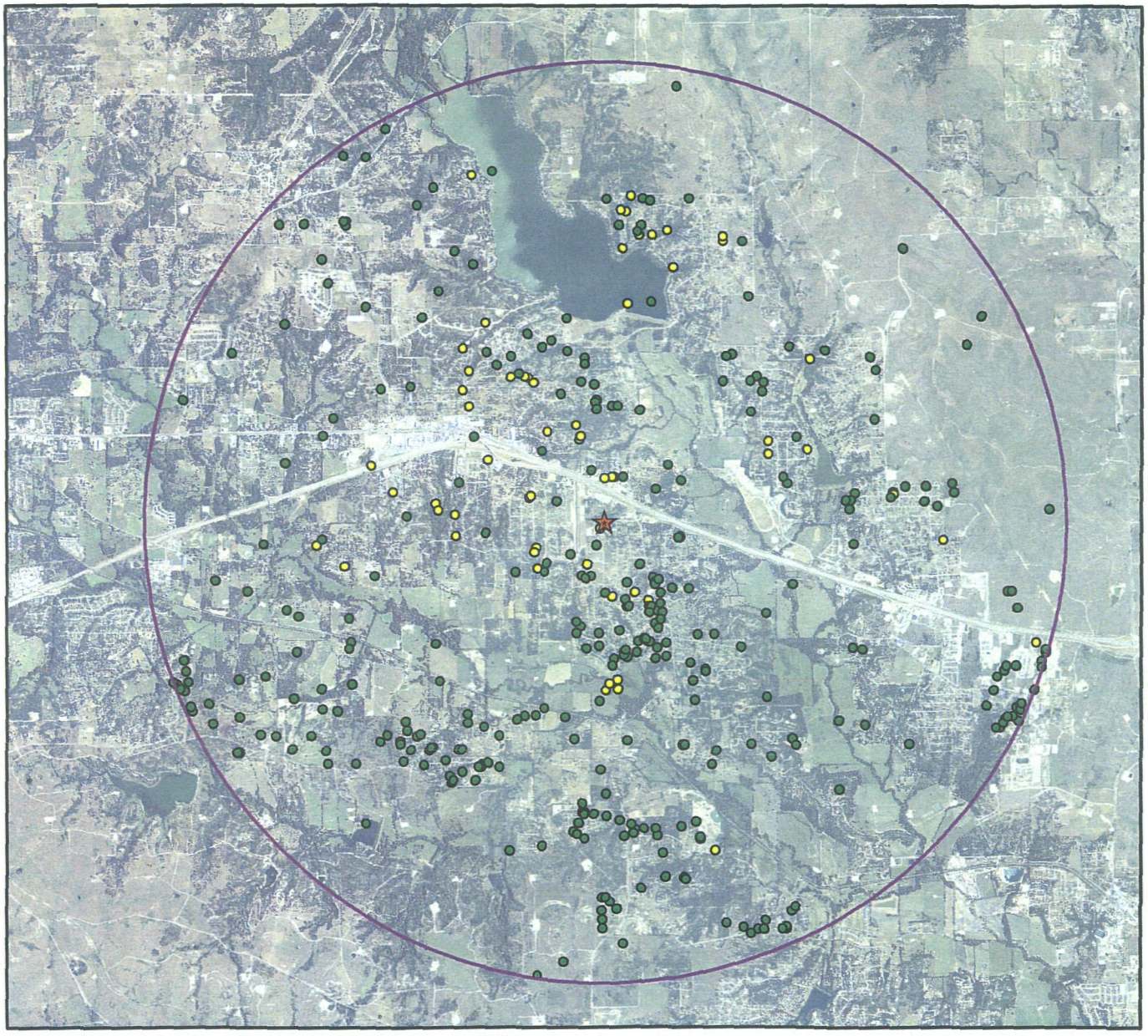


Figure 3-3 Groundwater Drinking Water Wells Within 4-Mile Radius



TCEQ

N

SOURCE - The base data used are the Parker County, Texas National Agriculture Imagery Program (NAIP). This NAIP was obtained from the Texas Natural Resource Information System (TNRIS) at www.tnris.state.tx.us. No attempt has been made to alter or correct any data in this NAIP. NAD 1983 UTM Zone 14N.

Circle Court Ground Water
Parker County, Texas
TXN000606965

Legend

- Domestic well
- Public water supply well
- Site
- 4-Mile Radius

4 REFERENCES

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REFERENCE 1

HAZARD RANKING SYSTEM
(Final Rule)

40 CFR Part 300, Appendix A

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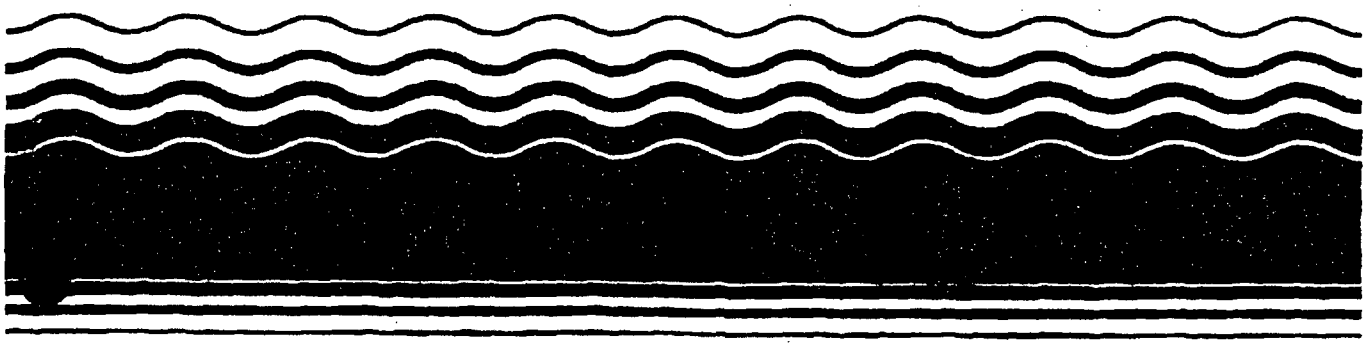
Response

Publication 9345.1-07
PB92-963377
EPA 540-R-92-026
November 1992

Superfund

EPA

Hazard Ranking System Guidance Manual



REFERENCE 3

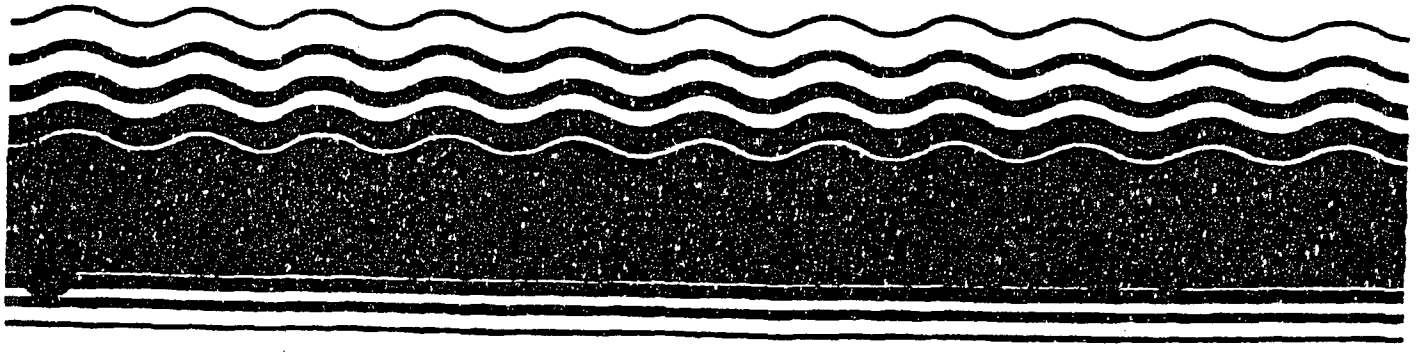
United States
Environmental Protection
Agency

Office of Emergency and
Remedial Response
Washington DC 20460

EPA/540/G-91/013
September 1991

EPA

Guidance for Performing Preliminary Assessments Under CERCLA



REFERENCE 4

Drinking Water and Health Basics
Frequently Asked Questions
Local Drinking Water Information
Drinking Water Standards
List of Contaminants & MCLs
Regulations & Guidance
Public Drinking Water Systems
Source Water Protection
Underground Injection Control
Data & Databases
Drinking Water Academy
Safe Drinking Water Act
National Drinking Water Advisory Council
Water Infrastructure Security

Consumer Factsheet on: TRICHLOROETHYLENE

List of Contaminants

As part of the Drinking Water and Health pages, this fact sheet is part of a larger publication:
National Primary Drinking Water Regulations

This is a factsheet about a chemical that may be found in some public or private drinking water supplies. It may cause health problems if found in amounts greater than the health standard set by the United States Environmental Protection Agency (EPA).

What is Trichloroethylene and how is it used?

Trichloroethylene is a colorless or blue organic liquid with a chloroform-like odor. The greatest use of trichloroethylene is to remove grease from fabricated metal parts and some textiles.

The list of trade names given below may help you find out whether you are using this chemical at home or work.

Trade Names and Synonyms:

1,1,2-Trichloroethylene
Acetylene trichloroethylene
Algylen
Anameth
Benzinol
Chlorilen
CirCosolv
Germalgene
Lethurin
Perm-a-chlor
Petzinol
Philex
TRI-Plus M
Vitran

Why is Trichloroethylene being Regulated?

In 1974, Congress passed the Safe Drinking Water Act. This law requires EPA to determine safe levels of chemicals in drinking water which do or may cause health problems. These non-enforceable levels, based solely on possible health risks and exposure, are called Maximum Contaminant Level Goals.

The MCLG for trichloroethylene has been set at zero because EPA believes this level of protection would not cause any of the potential health problems described below.

Based on this MCLG, EPA has set an enforceable standard called a Maximum Contaminant Level (MCL). MCLs are set as close to the MCLGs as possible, considering the ability of public water systems to detect and remove contaminants using suitable treatment technologies.

The MCL has been set at 5 parts per billion (ppb) because EPA believes, given present technology and resources, this is the lowest level to which water systems can reasonably be required to remove

this contaminant should it occur in drinking water.

These drinking water standards and the regulations for ensuring these standards are met, are called National Primary Drinking Water Regulations. All public water supplies must abide by these regulations.

What are the Health Effects?

Some people who drink water containing trichloroethylene in excess of the MCL over many years could experience problems with their liver and may have an increased risk of getting cancer.

How much Trichloroethylene is produced and released to the environment?

Production of trichloroethylene has increased from just over 260,000 lbs. in 1981 to 320 million lbs. in 1991. Major environmental releases of trichloroethylene are due to air emissions from metal degreasing plants. Wastewater from metal finishing, paint and ink formulation, electrical/electronic components, and rubber processing industries also may contain trichloroethylene.

From 1987 to 1993, according to the Toxics Release Inventory, trichloroethylene releases to water and land totalled over 291,000 lbs. These releases were primarily from steel pipe and tube manufacturing industries. The largest releases occurred in Pennsylvania and Illinois. The largest direct releases to water occurred in West Virginia.

What happens to Trichloroethylene when it is released to the environment?

Trichloroethylene released to soil will either evaporate or leach into ground water. If released to water, it will also quickly evaporate. It has only a moderate potential to accumulate in aquatic life.

How will Trichloroethylene be Detected in and Removed from My Drinking Water?

The regulation for trichloroethylene became effective in 1989. Between 1993 and 1995, EPA required your water supplier to collect water samples every 3 months for one year and analyze them to find out if TCE is present above 0.5 ppb. If it is present above this level, the system must continue to monitor this contaminant until the system has taken immediate steps to remediate the problem or the State has determined that the contaminant will remain reliably and consistently below the MCL.

If contaminant levels are found to be consistently above the MCL, your water supplier must take steps to reduce the amount of TCE so that it is consistently below that level. The following treatment methods have been approved by EPA for removing TCE: Granular activated carbon in combination with Packed Tower Aeration.

How will I know if Trichloroethylene is in my drinking water?

If the levels of trichloroethylene exceed the MCL, 5 ppb, the system must notify the public via newspapers, radio, TV and other means. Additional actions, such as providing alternative drinking water supplies, may be required to prevent serious risks to public health.

Drinking Water Standards:

Mclg: zero

Mcl: 5 ppb

Trichloroethylene Releases to Water and Land, 1987 to 1993 (in pounds):

		Water	Land
TOTALS (in pounds)		**100,293**	**191,088**
Top Six States*			
PA	0	33,450	
IL	0	30,711	

GA	3,742	17,532
TX	0	21,000
MA	0	19,920
WV	12,822	0

Major Industries		
Steel pipe, tubes	31	39,288
Misc. Indust. Organics	27,708	0
Car parts, access.	4,405	19,920
Plating, polishing	3,342	20,100
Wool fabric mills	3,942	18,081

* State totals only include facilities with releases greater than 10,000 lbs.

Learn more about your drinking water!

EPA strongly encourages people to learn more about their drinking water, and to support local efforts to protect and upgrade the supply of safe drinking water. Your water bill or telephone books government listings are a good starting point.

Your local water supplier can give you a list of the chemicals they test for in your water, as well as how your water is treated.

Your state Department of Health/Environment is also a valuable source of information.

For help in locating these agencies or for information on drinking water in general, call: EPAs Safe Drinking Water Hotline: (800) 426-4791.

For additional information on the uses and releases of chemicals in your state, contact the: Community Right-to-Know Hotline: (800) 424-9346.

List of Contaminants

Safewater Home | About Our Office | Publications | Links | Office of Water | En Español | Questions and Answers

EPA Home | Privacy and Security Notice | Contact Us

Last updated on Tuesday, November 28th, 2006
URL: http://www.epa.gov/safewater/dwh/c-voc/trichlor.html

REFERENCE 5

TWDB PROJECT NUMBER 98-483-246
TNP PROJECT NUMBER PCU97237

SOUTHEASTERN PARKER COUNTY REGIONAL WATER STUDY

1997-1998 RESEARCH AND PLANNING GRANT

FINAL REPORT

TO THE

TEXAS WATER DEVELOPMENT BOARD

APRIL 1999

FUNDED THROUGH THE

PARKER COUNTY UTILITY DISTRICT NUMBER 1

FUNDED BY

THE CITIES OF WILLOW PARK, ALEDO AND HUDSON OAKS
AND
THE COUNTY OF PARKER

WITH GRANT FUNDING BY THE

TEXAS WATER DEVELOPMENT BOARD

PREPARED BY

TEAGUE NALL AND PERKINS, INC.
915 Florence Street
Fort Worth, Texas 76102
(817) 336-5773

SERVICE HISTORIES

RELEVANCE OF HISTORY

The issue of water in southeastern Parker County is becoming complex due to the number of entities which will potentially be involved. Therefore, it is hard to extrapolate each entity's future interests without a quick review of their pasts. This will provide a more complete framework for the decisions to be made and the social, political and physical constraints involved.

PARKER COUNTY

Parker County was established in 1855. It covers 902 square miles straddling the ridge separating the Trinity River and Brazos River basins. Located immediately west of Tarrant County (Fort Worth), it has enjoyed a long relationship as a bordering rural area to the growing Fort-Worth Dallas metroplex. Elevation for the county ranges from 700 to 1400 ft MSL and the general terrain is hilly. The county normally receives just over 32 inches of rain per year and experiences an average monthly temperature range of 34 to 96 degrees Fahrenheit. The county seat is Weatherford which has a population of approximately 20,000 people. The county is dotted with an estimated 20 other small towns and communities for a total county population of greater than 70,000 people.

Historically, the county has been considered agricultural, but is currently trending toward urbanized uses. Water for domestic uses has typically been supplied by wells drilled to Paluxy or lower Trinity formations. The Brazos River flows along the southwestern side of the county. The Clear Fork of the Trinity River flows through the eastern portion of the county. Lake Weatherford, owned and operated by the City of Weatherford, is on the Clear Fork. At present, sewer in the county is primarily via septic tanks.

WEATHERFORD

The City of Weatherford was founded in the mid 1800's. With the creation of Parker County, Weatherford was established as the county seat. Weatherford was a frontier outpost and maintained a central position at the intersection of both east-west and north-south roadways and railways. Prior to 1900, the City had already been operating water, power, and gas utilities. Originally, water was supplied by a large well at what is now Cherry Park. Later this was augmented by other wells. By the drought of the 1950's, Weatherford operated a number of water wells along with a treatment plant. The treatment plant utilized water from Sunshine Lake, an old railroad water refill lake for steam engines, located just northwest of town. During the drought of the 1950's, both the lake and well supplies became threatened, and Weatherford constructed Lake Weatherford northeast of town, which has since completely replaced wells and Sunshine Lake as municipal water sources. Until recently, a treatment plant near downtown treated the Lake Weatherford water for municipal use. In the last few years, Weatherford has annexed much of the area between the City and Lake Weatherford, and has constructed a new replacement treatment plant on the southwestern edge of the Lake. Part of this action has been in preparation for the future delivery of water from Lake Benbrook to this point. It should be noted that Weatherford's contract to purchase raw water from TRWD currently precludes them from wholesaling treated water to others. However, the contract does contain a provision which might be used to ease this restriction.

Weatherford is a Home Rule city. It has both a City Council and Municipal Utility Board. Technically, the Utility Board is subordinate to the Council. However, several of the positions on the Utility Board are held by City Council members such that only a few board decisions are not ratified by Council.

Weatherford is home to a fairly large public school district and a community college. In addition, Weatherford has several radio stations and a daily (except Saturday) newspaper, the Weatherford Democrat.

ALEDO

The City of Aledo was founded in 1882 as a railroad refueling point near the Clear Fork of the Trinity River. Prior to 1882, it was known as the community of Parker Station. Due to its position on the railroad, Aledo has always had a good mix of commercial and residential land use. The City has operated a number of water wells throughout the years, and their current municipal system is a mix of City developed wells and well systems installed by developers prior to land annexations. It is thought that some residential property owners may still have private wells.

As an older community, the Aledo area also has its own school district which services a majority of the study area. There is a weekly newspaper, the Community News, which serves the study area. The City of Aledo operates a small sewer treatment plant along with its water utilities. It is a General Law city and has collected property taxes for a number of years.

WILLOW PARK

The City of Willow Park was incorporated in 1964. This city extends from the east side of Lake Weatherford southward to the now defunct community of Chico. The south end of Willow Park borders the Bankhead Highway, one of the first coast to coast American paved roads. This highway has since been replaced by U.S. Highway 80 in the early 1940's and by Interstate 20 in the 1970's. Willow Park has primarily been a bedroom community to Fort Worth, and to Carswell Air Force Base (Fort Worth NAS/JRB) along with General Dynamics (Lockheed) in particular. General Dyamics/Lockheed has operated the Squaw Creek Recreation Center in the heart of Willow Park for its employees for several decades. Willow Park is home to one of Texas' few horse racing facilities, Squaw Creek Downs (formerly Trinity Meadows.)

Originally, Willow Park operated a portion of the old Chico water system and a separate water system just to the east of Lake Weatherford. Over time, the incorporation of several other private well systems and city wells were included to form a large system capable of supplying new subdivisions. A recent upgrade involves the connection of the main system, which is east of the Clear Fork, with the Willow Springs Oaks area, west of the Clear Fork.

Although Carswell and Lockheed are not as active as in times past, Willow Park has continued to grow rapidly due to its location on Interstate 20 and its proximity to Fort Worth. In addition, commercial growth continues along the Interstate highway. Recently, Willow Park has started serving a portion of this commercial Interstate corridor with sewer treatment. The remainder of the town remains on septic systems.

Willow Park is a General Law city with less than 5,000 population. It has only been within the last few years that Willow Park has started to collect property taxes.

REFERENCE 6

Texas Water Development Board
Groundwater Database Reports

groundwater resources

Record of Wells
County: Parker

State Well	Owner	Latitude	Longitude	Date Drilled	Well Depth	Casing Info.	Aquifer	Elevation	Water Levels	Lift	Power	Use	Remarks
3108203	J. W. Davis	325816	980304	/ /1921	2270		NOT-APPL	1170					B-5103 Site No. A-42.
3108301	Wayne Murphy	325839	980138	06/18/1982	200	C 5 0 140 S 5 140 200	321PLPN	1245	1 measurement 1982 -90	P	W	H	Cemented from 20 ft. to surface. Casing perforated. Pump set at 189 ft.
3108302	Wayne Murphy	325841	980138	-/-/1988	199	C 5 0 140 S 5 140 200	218TWMW	1240	1 measurement 1991 -146	S	E	I	Casing perforated. Gravel packed.
3108303	T. F. Hardy	325915	980151		65	C 5	218TVPK	1200		P	W	H	B-5103 Site No. A-1.
3108501	O. E. Doss	325718	980238	/ /1935	432	C 5	324MLWL	1150	1 measurement 1950 -131.1	P	W	S	B-5103 Site No. A-15.
3108502	Herring	325633	980321	/ /1922	2855		NOT-APPL	1100					B-5103 Site No. A-49.
3108503	T. L. Bradley	325556	980310	/ /1922	4500		NOT-APPL	1060					B-5103 Site No. A-50.
3108601	Whitt Public School	325720	980104	-/-/--	60		218TVPK	1110	40 measurements 1949 to 2008 MIN -43.03 MAX -29.03	J	E	H	Water-level observation well.
3108602	City of Whitt Well No.1	325725	980113	06/-/1965	410	C 10 0 220 S 10 220 230 C 10 230 380	300PLZC	1130	2 measurements 1965 to 1975 MIN -255.8 MAX -200	S 2.00 hp	E	P	Cemented from 380 ft. to surface. Casing gun-perforated.

State Well	Owner	Latitude	Longitude	Date Drilled	Well Depth	Casing Info.				Aquifer	Elevation	Water Levels	Lift	Power	Use	Remarks
3219201	City of Willow Park	324444	974043	07/15/1965	180	C	5	0	120	218PLXY	960	1 measurement	S	E	P	Cemented from 105 ft. to surface.
	Hillcrest Add.					S	5	120	160			1975	1.00 hp			Casing perforated. Pump set at 176
						C	5	160	180			-86.4				ft. Reported yield 30 gpm
3219202	S. N. Duncan	324245	974106	-/-/--	120	C	4			218PLXY	930		N		U	B-5103 Site No. E-46. Destroyed.
3219203	City of Hudson Oaks	324439	974206	11/30/1985	208	C	9	0	120	218PLXY	961	1 measurement	S	E	P	Cemented from 120 ft. to surface.
	Hidden Oaks					C	7	0	120			1985				Casing slotted. Gravel packed from
						S	7	120	200			-83				100 to 208 ft.
						C	7	200	208							
3219204	City of Hudson Oaks	324450	974131	04/01/1985	255	C	9	0	100	218PLXY	1009	1 measurement	S	E	P	Cemented from 100 ft. to surface.
	Diamond Oaks No.1					C	7	0	102			1985				Casing slotted. Gravel packed from
						S	7	102	250			-97				100 to 255 ft. Pump set at 230 ft.
						C	7	250	255							
3219205	City of Hudson Oaks	324432	974137	08/04/1986	196	C	8	0	58	218PLXY	960	1 measurement	S	E	P	Cemented from 58 ft. to surface.
	Diamond Oaks No.2					C	6	0	80			1986				Casing slotted. Gravel packed from
						S	6	80	190			-70				58 to 196 ft.
						C	6	190	196							
3219206	City of Hudson Oaks	324431	974137	08/01/1990	225	C	9	0	80	218PLXY	950	1 measurement	S	E	P	Cemented from 80 ft. to surface.
	Diamond Oaks No.3					C	6	0	155			1990				Casing slotted. Gravel packed from
						S	6	155	215			-90				80 to 225 ft.
						C	6	215	225							
3219207	City of Hudson Oaks	324431	974137	08/08/1990	220	C	9	0	80	218PLXY	950	1 measurement	S	E	P	Cemented from 80 ft. to surface.
	Diamond Oaks No.4					C	6	0	130			1990				Casing slotted. Gravel packed from
						S	6	130	210			-75				80 to 220 ft.
						C	6	210	220							
3219208	City of Hudson Oaks	324429	974137	06/01/1991	220	C	8	0	80	218PLXY	948	1 measurement	S	E	P	Cemented from 80 ft. to surface.
	Diamond Oaks No.5					C	6	0	150			1991				Casing slotted. Gravel packed from
						S	6	150	215			-89				80 to 220 ft.
						C	6	215	220							

State Well	Owner	Latitude	Longitude	Date Drilled	Well Depth	Casing Info.				Aquifer	Elevation	Water Levels	Lift	Power	Use	Remarks
3219209	City of Willow Park Willow Springs Oaks	324443	974043	10/11/1983	244	C 8 0 60 C 6 0 100 S 6 100 200 C 6 200 220 S 6 220 239 C 6 239 244				218PLXY	960	1 measurement 1983 -71	S	E	P	Cemented from 60 ft. to surface. Casing slotted. Gravel packed from 50 to 244 ft. Pump set at 210 ft. Drawdown 50 ft. after 3 hrs. pumping 65 gpm
3219210	Dyegard Water Co. Oakview #1	324408	974027	02/08/1995	253	C 8 0 105 C 6 0 120 S 6 120 248 C 6 248 253				218PLXY	971	1 measurement 1995 -41	S	E	P	Oakview #1. Measured yield 70 GPM with 60 feet drawdown after pumping 20 hours. Gravel packed from 100 to 253 feet. Cemented from 0 to 105 feet.
3219211	Diamond Oaks Well #8	324454	974120	04/25/1995	275	C 8 0 63 C 6 0 70 S 6 70 170 C 6 170 176				218PLXY	1000	1 measurement 1995 -41	S	E	P	Owners well #8. Measured yield 60 GPM with 80 feet drawdown after pumping 12 hours. Gravel packed from 50 to 275 feet. Cemented from 0 to 63 feet.
3219212	Dyegard Water Co. Oakview #2	324420	974051	08/20/1997	260	C 8 0 120 C 6 0 150 S 6 150 180 C 6 180 200 S 6 200 220 C 6 220 240				218PLXY	984	1 measurement 1997 -100	S	E	P	Oakview #2. Reported yield 80 GPM with 100 feet drawdown after pumping 8 hours in 1997. Gravel packed from 100 to 260 feet. Cemented from 0 to 120 feet.
3219213	C. E. Phillips	324328	974200		30	C 36				218PLXY	890	1 measurement 1950 -20.1	P	H	H	B-5103 Site No. E-43.
3219214	Mrs. D. Hounsel	324306	974029		100	C 4				218PLXY	860	1 measurement 1949 -35.8	P	W	H	B-5103 Site No. E-45.
3219215	Parker County	324233	974108		189					218TVPK	976	4 measurements 2006 to 2008 MIN -119.5 MAX -111.1	S	E	H	

State Well	Owner	Latitude	Longitude	Date Drilled	Well Depth	Casing Info.				Aquifer	Elevation	Water Levels	Lift	Power	Use	Remarks
3219301	City of Willow Park Well No.10	324431	973741	02/25/1986	260	C	10	0	138	218PLXY	952	1 measurement 1986 -99	S	E	P	Cemented from 138 ft. to surface. Casing slotted. Gravel packed from 140 to 260 ft. Pump set at 235 ft. Drawdown 125 ft. after 24 hrs. pumping 30 gpm.
						C	8	0	140							
						S	8	140	240							
						C	8	240	260							
3219302	City of Willow Park Willow Springs West	324436	973959	08/12/1986	257	C	6	0	206	218PLXY	952	3 measurements 1986 to 2007 MIN -181.18 MAX -117	S	E	P	Cemented from 118 ft. to surface. Screened. Gravel packed from 118 to 257 ft. Pump set at 235 ft. Drawdown 113 ft. after 36 hrs. pumping 13 gpm.
						S	6	206	246							
						C	6	246	257							
3219303	City of Willow Park Willow Springs North	324437	973959	03/16/1984	250	C	6	0	45	218PLXY	952	4 measurements 1984 to 2007 MIN -154.36 MAX -86	S	E	P	Cemented from 45 ft. to surface. Casing slotted. Gravel packed from 50 to 250 ft. Pump set at 215 ft. Drawdown 120 ft. after 2 hrs. pumping 28 gpm.
						C	5	0	100							
						S	5	100	225							
						C	5	225	250							
3219304	Spring Valley Water Co Willow Glen	324423	973850	02/13/1984	145	C	7	0	90	218PLXY	850		S	E	P	Cemented from 90 ft. to surface. Casing perforated. Estimated yield 30 gpm.
						S	7	90	145							
3219305	C.S. Caylor	324421	973846	/ /1940	275	C	5			218PLXY	880	1 measurement 1949 -57.7	P 0.75 hp	E	H	B-5103 Site No. F-8.
3219306	E. Neil	324436	973955	/ /1942	378	C	8			218PLXY	910	1 measurement 1949 -108.4	P	W	S	B-5103 Site No. F-9.
3219307	C.J. Gilliland	324424	973911	/ /1942	26	C	5			110ALVM	830	1 measurement 1942 -8	P 0.75 hp	E	H	B-5103 Site No. F-10.
3219308	Ken Hall	324302	973759	06/29/06	680	C	4	0	680	218PLXY	900	4 measurements 2006 to 2008 MIN -218.62 MAX -207.6	S	E	H	

REFERENCE 7

Public Water Systems Details/Data Sheet for WILLOW SPRINGS OAKS WATER SYSTEM (1840093)

Affiliations | Comments | Samples | Schedules | Fee | Site Visits | Documents
Violations | Sources | Sold Source | Entry Points | Plants

Responsible Party

Organization: **CITY OF WILLOW PARK**
Address: **101 STAGE COACH TRL**
WEATHERFORD, TX 76087
Individual: **LES COOLEY**
Job Title: **MAYOR** Phone: **(817) 441-7108**

Occurences were successfully retrieved.

Properties

Utility CCN/Reg: **(11814) CITY OF WILLOW PARK**
Ownership Type: **MUNICIPALITY**
System Type: **COMMUNITY**
County: **PARKER (184)**
Region: **ARLINGTON (4)**
Monitoring Class: **GROUND WATER**
Out of Season:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Customer Groups

Class	Category	Population Count	Connection Count	Meter Count
RESIDENTIAL	RESIDENTIAL AREA	336	112	112

No occurrences retrieved.

Capacity

Total Storage:

Total Storage: **0.070 MG**
Elevated Storage: **0.000 MG**
Pressure Tank Capacity: **0.00233 MG**

Production:

Total Production: **0.120 MGD**
Max Purchased Capacity: **0.000 MGD**

Emergency Production: **0.000 MGD**

Total Service Capacity: **0.000 MGD**

Service Pump Capacity: **0.360 MGD**

Emergency Service Capacity: **0.000 MGD**

Consumption:

Avg Daily Consumption: **0.006 MGD**

Max Daily Consumption: **0.000 MGD**

Activity

Activity Date: **04/20/2001**

Activity Status: **DELETED/DISSOLVED**

Site Visits

Survey Date	Visit Type	Deficiency Score	Inspector
01/28/1999	SURVEY	17	PAUL LITTLETON

Site Visit occurrences retrieved.

Comments

Comment Date	Text	Staff Name
05/11/2004	NO LONGER A PWS - CREDIT FY01 PHS FEE---TC.	
06/14/2001	4/20/01-NOW BELONG TO WILLOW PARK 1840027	

Occurrences retrieved.

Run Water System Data Sheet Report

No occurrences retrieved.

For questions or comments regarding information on this page, contact the TCEQ iWUD Web Manager

Version V2.1.2

REFERENCE 8

PWS-1840027-CO

Texas Co[illegible]mission on Environm[illegible]tal Quality
Investigation Report
CITY OF WILLOW PARK
CN600666374

WILLOW PARK MUNICIPAL SYSTEM
RN101242444

Investigation # 611912 **Incident #**

Investigator: SANDRA CALDERON-GARCIA **Site Classification**
GW > 1K-10K CONNECTION

Conducted: 10/24/2007 -- 12/12/2007 **No Industry Code Assigned**

Program(s): PUBLIC WATER SYSTEM/SUPPLY

Investigation Type : Compliance Investigation **Location :** 2 MI NO OF I20

Additional ID(s) : 1840027

Address: 101 W STAGE COACH TRL; WILLOW PARK, TX 76087 **Activity Type:** REGION 04 - DFW METROPLEX
PWSCCIGWCM - PWSCCOGWCM PWS CCI Discretionay Groundwater, Purchase, Community

Principal(s) :

Role	Name
RESPONDENT	CITY OF WILLOW PARK

Contact(s) :

Role	Title	Name	Phone	
Notified	PUBLIC WORKS DIRECTOR	MR LANCE PETTY	Work	(817) ~~441-7108~~ 441-5027
			Fax	(817) 441-6900
Participated in Investigation	PUBLIC WORKS DIRECTOR	MR LANCE PETTY	Fax	(817) 441-6900
			Work	(817) ~~441-7108~~ 441-5027
Participated in Investigation	PUBLIC WORKS SUPERINTENDENT	MR RUDY RAGLE	Work	(817) 441-2812
			Fax	(817) 441-2858
Regulated Entity Mail Contact	MAYOR	HON BRAD JOHNSON	Work	(817) 441-7108
			Fax	(817) 441-6900

Other Staff Member(s) :

Role	Name
QA Reviewer	CHARLES MARSHALL

Associated Check List

Checklist Name	Unit Name
2005 PWS A STANDARD FIELD	WILLOW PARK WATER SYSTEM
2005 PWS Z PDW - Public Drinking Water Violations	WILLOW PARK WATER SYSTEM
2005 PWS Z PDW - Public Drinking Water Violations	WILLOW PARK I
2005 PWS Z PDW - Public Drinking Water Violations	WILLOW PARK II

Investigation Comments :

1. GENERAL INFORMATION

ID No. 1840027
CCN No. 11814
Investigation #: 611912
Enforcement #: N/A

Region: 4

Name of System: City of Willow Park
County: Parker
Physical location: 516 Ranch House Rd., Willow Park, Parker County, Texas

Responsible Official: Brad Johnson
Title: Mayor
Phone #: (817) 441-7108
Fax #: (817) 441-6900
Mailing Address: 516 Ranch House Rd., Willow Park, TX 76087

Chief Cert Op Name: J. Lance Petty, Public Works Director
Grade & Type: C-Ground Water
Phone #: (817) 441-7108
Fax #: (817) 441-6900
Total # Cert. Ops.: 2

WS Manager/Superintendent: J. Lance Petty
Other Officials Contacted: 0

Surveyed With: J. Lance Petty, Rudy P. Ragle

Area Served: City of Willow Park
Supplier and Source: City of Willow Park; Groundwater
Interconnection with other PWS: No
Name PWS I/C: N/A
Type I/C: N/A
Retail Service Connections: 1685
Retail Meters: 1685
Retail Population: 5055
Wholesale Master Meters: 0
Wholesale Service Connections:0
Wholesale Population: None
Purchase Master Meters: 0

Distance to and Name of Nearest PWS: Dyegard; PWS ID#1840126

Type of Investigation (CCI, CCMM, REC, Other): CCI
Previous Investigation Date: 03/05/2002
Well Operational Status Changed: No

Description of Supply, Source, Treatment, and Chemicals Used: Refer to system schematic. City of Willow Park is a community water system located in Parker County, TX. On the day of the investigation, City of Willow Park consisted of 1685 connections and 1685 meters, serving a population of approximately 5055 (based on 3 times the number of connections). Water is supplied to the City of Willow Park distribution through two separate pressure planes. Pressure Plane #1 consists of three pump stations and serves 1571 connections. The Ground Storage Pump Station receives water from Wells #1, 2, 3, 4, 5, 6P, 6T, 14, and 15. The raw water is chlorinated via gaseous chlorine. Subsequently, the water flows into two 0.5 MG ground storage tanks then is pumped into the distribution
through three 30HP/600GPM service pumps. The Fox Hunt Pump Station receives water from Wells #16T and 16P. The raw water is chlorinated via sodium hypochlorite. Subsequently, the water flows into a 0.03 MG ground storage tank then is pumped into the distribution through two 25HP/500GPM service pumps. The Willow Wood Pump Station secures water from Well # 11 and Willow Wood North and Willow Wood South. Raw water is chlorinated with sodium hypochlorite then flows into a 0.03 MG ground storage tank. The chlorinated water is sent into the distribution through three service pumps rated at 2HP/40GPM, 5HP/100GPM, and 10HP/200GPM each. Pressure is maintained via two 0.25 MG elevated storage tanks located at the Ground Storage Pump Station on 3517 Indian Camp and at the Fox Hunt Pump Station on 1109 Fox Hunt Trail. A pressure valve which normally remains closed connects both pressure planes.

Pressure Plane #2 consists of two pump stations and serves 114 connections south of I-20. The Willow Springs Pump Station secures water from the Willow Springs North and Willow Springs South wells. Raw water is chlorinated with sodium hypochlorite then flows into a 0.03 MG ground storage tank. The chlorinated water is sent into distribution through three 2.5HP/50GPM service pumps. The Willow Springs Oaks Pump Station secures water from the Willow Springs Oaks well. The raw water is treated with sodium hypochlorite and flows into a 0.06 MG ground storage tank. The water is sent into distribution through three 2.5HP/50GPM service pumps. Pressure is maintained via a 0.125 MG elevated storage tank located at the Willow Springs Oaks Pump Station.

The system has several emergency use only wells: #7, #9, #10, and El Chico Pump Station.

Total Well Cap.: 938 GPM
Total Svc. Pump Cap.: 3440 GPM
Total Storage Cap.: 1.15 MG
Elevated Storage Cap.: 0.625 MG

Maximum Daily Demand (MDD): 1.648 MG Date: 08/01/07
Average Daily Usage: 0.787 MGD
Time Period: 10/18/2006 - 10/18/2007
Wholesale Contract: None
Maximum Purchase Rate: N/A

MICROBIOLOGICAL
Number of Samples Required Based on Current Population: 6
Number of Samples Required Based on Bact. Records: 6
Routine Submitted: 3
Number of Raw Samples Required: 0
Raw Submitted: 0

CHEMICAL
Acceptable Quality: Yes
Date of Last Analysis:
IOC: 03/15/05
NO2/NO3: 03/15/05
RC: 03/23/06
VOC: 03/15/05
SOC: 03/15/05

EXCEPTION / ALTERNATIVE CAPACITY REQUIREMENT
N/A

GENERAL INFORMATION

Mr. J. Lance Petty, Public Works Director, received prior notification of the investigation by Sandra Calderon-Garcia on September 20, 2007. A list of the information required for the investigation was sent via email to Mr. Petty. The investigation was conducted on October 18 and 24, 2006, with Mr. J. Lance Petty and Mr. Rudy L. Ragle.
The exit interview was conducted with Mr. Petty. The system had several documented violations at the time of the investigation.

2. SYSTEM FACILITIES

Pressure Plane #1
TOTAL WELL PRODUCTION = 837 GPM = 1.205 MGD

E	P	Source	Code	Well Desig.	Status	Depth	GPM	Location
001		G1840027A		Well 1	O	146'	75	Indian Camp & Lake View
001		G1840027B		Well 2	O	156'	23	East Lake Drive
001		G1840027C		Well 3	O	177'	74	East Lake Drive
001		G1840027D		Well 4	O	179'	53	East Lake Drive
001		G1840027E		Well 5	O	174'	77	Indian Camp

001 G1840027N Well 14 O 290' 75 Ground Storage PS - Indian Camp & Crown Rd.
001 G1840027O Well 15 O 630' 110 Ground Storage PS - Indian Camp & Crown Rd.
002 G1840027M Willow Wood No. O 260' 55 Willow Wood PS - Sherwood St.
002 G1840027L Willow Wood So. O 260' 35 Royal View Drive
003 G1840027F 6P O 158' 66 Ridge Road
003 G18400257V 6T O 620' 105 Ridge Road
008 G1840027K Well 11 O 215' 47 Squaw Creek Road
009 G1840027Q Well 16P O 306' 22 Fox Hunt PS - 1109 Fox Hunt Trail
009 G1840027P Well 16T O 650' 20 Fox Hunt PS - 1109 Fox Hunt Trail

GROUND STORAGE: (1.06 MG)

Volume (Gal)	Material	Location
500,000	Steel	Ground Storage PS - Indian Camp & Crown Rd.
500,000	Steel	Ground Storage PS - Indian Camp & Crown Rd.
30,000	Steel	Fox Hunt PS - 1109 Fox Hunt Trail
30,000	Steel	Willow Wood PS - Sherwood St.

ELEVATED STORAGE: (0.5 MG)

Volume (Gal)	Material	Location
250,000	Steel	Ground Storage PS - Indian Camp & Crown Rd.
250,000	Steel	Fox Hunt PS - 1109 Fox Hunt Trail

SERVICE PUMPS: (3140 GPM = 4.5216 MGD)

Number	Horse Power	GPM	Location
1	30	600	Ground Storage PS - Indian Camp & Crown Rd.
2	30	600	Ground Storage PS - Indian Camp & Crown Rd.
3	30	600	Ground Storage PS - Indian Camp & Crown Rd.
4	25	500	Fox Hunt PS - 1109 Fox Hunt Trail
5	25	500	Fox Hunt PS - 1109 Fox Hunt Trail
6	2	40	Willow Wood PS - Sherwood St.
7	5	100	Willow Wood PS - Sherwood St.
8	10	200	Willow Wood PS - Sherwood St.

Pressure Plane #2
TOTAL WELL PRODUCTION = 101 GPM = 0.1454 MGD

E P	Source Code	Well Desig.	Status	Depth	GPM	Location
010	G1840027R	Willow Spr So	O	256'	32	Willow Springs PS - Quail Crest Dr.
010	G1840027S	Willow Spr No	O	256'	12	Willow Springs PS - Quail Crest Dr.
011	G1840027U	Willow Spr Oaks	O	182'	57	Willow Springs Oaks PS - Circle Ct.

GROUND STORAGE: (0.09 MG)

Volume (Gal)	Material	Location
60,000	Steel	Willow Springs Oaks PS - Circle Ct.
30,000	Steel	Willow Springs PS - Quail Crest Dr.

HYDROPNEUMATIC STORAGE: (0.0015 MG)

Volume (Gal)	Material	Location
500	Steel	Willow Springs Oaks PS - Circle Ct.
500	Steel	Willow Springs Oaks PS - Circle Ct.
500	Steel	Willow Springs Oaks PS - Circle Ct.

ELEVATED STORAGE: (0.125 MG)

Volume (Gal)	Material	Location
125,000	Steel	Willow Springs Oaks PS - Circle Ct.

SERVICE PUMPS: (300 GPM = 0.432 MGD)

Number	Horse Power	GPM	Location
9	2.5	50	Willow Springs PS - Quail Crest Dr.
10	2.5	50	Willow Springs PS - Quail Crest Dr.
11	2.5	50	Willow Springs PS - Quail Crest Dr.
12	2.5	50	Willow Springs Oaks PS - Circle Ct.

13	2.5	50	Willow Springs Oaks PS - Circle Ct.
14	2.5	50	Willow Springs Oaks PS - Circle Ct.

3. SYSTEM CAPACITIES

Pressure Plane #1
Well Capacities
Required = (0.6 GPM/Connection) (1571 Conn) = 942.6 GPM
Provided = 837 GPM = 1.205 MGD
Non-Compliant (12%)

Elevated Storage
Required = (200 gal/Conn) (1571 Conn) = 314,200 gal = 0.3142 MG
Provided = 500,000 gal = 0.5 MG
Compliant

Ground/Total Storage
Required = (200 gal/Conn) x (1571Conn) = 314,200 gal = 0.314 MG
Provided = 1,060,000 gal = 1.06 MG
Compliant

Service Pumping Capacity
Required = (0.6 GPM/Conn) x (1571 Conn) = 942.6 GPM
Provided = 3140 GPM = 4.5216 MGD

Service Pump Peaking Factor
N/A

Pressure Plane #2
Well Capacities
Required = (0.6 GPM/Connection) (114 Conn) = 68.4 GPM
Provided = 101 GPM = 0.145 MGD
Compliant
Elevated Storage
Required = (200 gal/Conn) (114 Conn) = 22,800 gal = 0.0228 MG
Provided = 125,000 gal = 0.125 MG
Compliant

*System has an additional 1500 gallons in Pressure Tank capacity at Willow Springs Oaks Pump Station.

Ground/Total Storage
Required = (200 gal/Conn) x (114 Conn) = 22,800 gal = 0.0228
Provided = 90,000 gal = 0.09 MG
Compliant

Service Pumping Capacity
Required = (0.6 GPM/Conn) x (114 Conn) = 68.4 GPM
Provided = 300 GPM = 0.432 MGD
Compliant

Service Pump Peaking Factor
N/A

Survey Date: 10/24/2007
Letter Date: 01/03/2008
Reply Date: 04/03/2008

Number of Pressure Planes:2
PP #1

Pressure: 80 psi
Chlorine: 1.29 mg/L
Location: 516 Ranch House Rd.

PP #2
Pressure: 72 psi
Chlorine: 0.36 mg/L
Location: 4812 Misty Meadow

4. ALLEGED VIOLATIONS

Track # 296397
§290.41(c)(3)(O)/§290.38(25) Facility Fencing
Failure to provide an intruder-resistant fence in order to protect Well #7, # 9, and #11. In addition, wells # 5, #4, and #3 must have a fence that is extending outward at a 45 degree angle. The fence must be at least six feet high and constructed of wood, concrete, masonry, or metal with three strands of barbed wire extending outward from the top of the fence at a 45 degree angle. In lieu of the barbed wire, the fence must be eight feet in height. The fence must be in good condition, and close enough to surface grade to prevent intruder passage, and kept locked when unattended. In lieu of a fence, wells, storage tanks, or pressure maintenance facilities may be installed in a vented, lockable building designed to prevent intruder access.

On the day of the investigation, Wells #7, # 9, and #11 only had a 6 foot privacy fence without three strands of barbed wire. The well sites for #5, #4, and #3 did not have the top three metal strands extending outward at a 45 degree angle and some of the barbed wire and fencing was sagging and in disrepair. In addition, the Ground Storage Pump Station fence had some damaged barbed wire.

Track # 296399
§290.41(c)(3)(K) Ground Water Sources and Development
Failure to seal the wellheads for Well # 9 (G1840027I) with the use of gaskets or a pliable crack-resistant caulking
compound.

On the day of the investigation, it was noted that the wellhead for Wells #9 (G1840027I) was not properly sealed. Mr. Petty was advised to seal the wellhead to prevent contamination of the well water.

Track # 296401
§290.41(c)(3)(K) Ground Water Sources and Development
Failure to provide well #11 (G1840027K) with a screened casing vent, which must face downward and be elevated so as to minimize the drawing of contaminants into the well. The screening must be l6-mesh or finer corrosion-resistant screen.

On the day of the investigation, it was noted that the wellhead for Wells #11 (G1840027K) was not properly sealed. Mr. Petty was advised to install a proper vent to prevent contamination of the well water.

Track # 296402
§290.41(c)(1)(F)
Failure to make available sanitary control easements for all of the wells at the time of inspection, or executive director approval for a substitute authorized in §290.41(c)(1)(F)(iv). A sanitary easement, or approved substitute, covering all property within 150 feet of each well location must be secured from adjacent landowners and recorded at the county courthouse to ensure that hazards will not develop in each well area. Residential type wells within the easement must be constructed to public water well standards. A copy of the recorded document must be submitted for our records.

On the day of the investigation, the Willow Park Water System did not have copies of the sanitary easements available for review for any of the wells.

Track # 296405
§290.41(c)(3)(J) Ground Water Sources and Development

Failure to provide a concrete sealing block surrounding Well #9 (G1840027I) which extends at least three feet from the well casing in all directions, with a minimum thickness of six inches and sloped to drain away at not less than 0.25 inches per foot shall be provided around the wellhead.

On the day of the investigation, it was noted that the concrete sealing block on Well #9 (G1840027I) did not extend three feet from the well casing in all directions.

Track # 296407
§290.42(e)(4)(C) Disinfection
Failure to provide the chlorination room with both high level and floor level screened vents. If the room contains more than one operating 150 pound cylinder of chlorine, a fan which is located at and draws air in through the top vent and discharges to the outside atmosphere through the floor level vent must be provided, with the fan switch located outside the enclosure.

On the day of the investigation, it was noted that the chlorine room at the Ground Storage Pump Station did not have both high level and floor level screened vents. Instead the room had a screened window. There did appear to be a previously existing lower level screened vent; however, the vent had been covered with metal siding. Mr. Petty was advised to have two screened vents in working condition at all times.

Track # 296408
§290.42(l)
Failure to provide a Plant Operations Manual.

On the day of the investigation, the system had an incomplete plant operations manual. The manual was missing the local and federal emergency contact telephone numbers and the emergency protocols in the event of a man-made or natural catastrophe.
Track # 296409
§290.42(e)(5)
Failure to provide a solution container lid which must be properly covered and sealed to prevent the entry of dust, insects, and other contaminants.

On the day of the investigation, it was noted that the hypochlorinator at the Fox Hunt Pump Station was not covered properly. Mr. Petty was advised that the container must remain covered and sealed to prevent contamination.

Track # 296411
§290.43(c)(3) Design and Construction of Storage Tanks
Failure to provide a properly designed overflow pipe which is equipped with a gravity-hinged and weighted cover at the Willow Wood, Willow Springs, and Willow Springs Oaks Pump Station ground storage tanks. The cover must seat properly with a gap of no more than 1/16 inch.

On the day of the investigation it was noted that the ground storage tank overflow had a greater than 1/16 inch gap. Mr. Petty was advised that he would need to ensure there was no gap greater than 1/16 inches wide.

Track # 296412
§290.43(c)(4) Design and Construction of Storage Tanks
Failure to equip each of the ground storage tanks at the Ground Storage Pump Station with a water level indicator located at the tank site. The indicator may be a float with a moving target, an ultrasonic level indicator, or a pressure gauge calibrated in feet of water. Pressure gauges must be not less than 3 inches in diameter and calibrated at not more than 2 foot intervals.

On the day of the investigation, Mr. Ragle indicated that both of the 0.5 MG shared the water level indicator. Mr. Ragle was informed that each of the ground storage tanks would need to have their own water level indicators.

Track # 296414
§290.45(b)(1)(C)(iii) Capacity Requirements

Failure to meet this Agency's "Minimum Water System Capacity Requirements." These requirements include: a well capacity of 0.6 gallons per minute per connection at Pressure Plane #1. Your water system must be modified to meet this requirement to assure an adequate supply of water at all times.

Please be advised that public water systems shall notify the executive director prior to making any significant change or addition to the system's production, treatment, storage, or distribution facilities. Public water systems shall submit plans and specifications for the proposed changes upon request.

The water system may request an exception to these requirements by writing to TCEQ, Water Supply Division, Public Drinking Water Section, Technical Review & Oversight, MC 155, P.O. Box 13087, Austin, TX 78711-3087; phone: (512) 239-4798.

On the day of the investigation, the system was providing a combined 837 GPM and was required to provide a minimum of 942.6 GPM

Track # 296417
§290.46(s)(1) Testing Equipment
Failure to calibrate flow measuring devices and rate-of-flow controllers that are required by §290.42(d) of this title at least once every 12 months.

On the day of the investigation, Mr. Petty indicated that the system did not have records of flow meter calibrations on the well meters.

Track # 296418
§290.46(m) Operating Practices for Public Water Systems
Failure to properly maintain all of the chlorine room doors located at each of the pump stations.

On the day of the investigation, it was noted that the doors for each of the pump station chlorine rooms were badly deteriorated with rust. Some of the doors were so rusted as to prevent proper closing of the doors.

Track # 296419
§290.46(t) Operating Practices for Public Water Systems
Failure to post a legible sign at each of its production, treatment, and storage facilities by each community system. The sign must be located in plain view of the public and must provide the name of the regulated entity and an emergency telephone number where a responsible official can be contacted.

On the day of the investigation, it was noted that the Fox Hunt PS not have an ownership sign on display.

Track # 296420
§290.46(n)(3) Engineering plans and maps
Failure to provide well completion data on the day of the investigation.

The system did not have the well data for Wells # 11, Willow Springs North, and Willow Springs South.

Track # 296422
§290.46(n)(2) Operating Practices for Public Water Systems
An accurate and up-to-date map of the distribution system shall be available so that valves and mains can be easily located during emergencies.

On the day of the investigation, the system did not have an up-to-date map of the distribution system available for review.

Track # 296424
§290.46(m)(4)
Failure to repair the leak on the 500 gallon pressure tank at the Willow Springs Pump Station.

One of the 500 gallon pressure tanks at pump station was leaking on the day of the investigation. Mr.

Petty indicated that the leak would be repaired as soon as practicable.

Track # 296425
§290.46(f)(3)(B)(vi) Backflow, Siphonage
Failure to maintain backflow prevention assembly test and maintenance reports for a minimum of three years. The regulated entity must provide these records to Commission staff for inspection upon request.

On the day of the investigation, the system could not provide copies of the backflow prevention assemblies installed at the industrial park businesses. Mr. Ragle was advised to obtain copies for the system.

Track # 296427
§290.46(b)
Failure to submit adequate number of samples for microbiological analysis.

On the day of the investigation, the Willow Park Water System did not have complete copies of the bacteriological samples (laboratory analysis) available for review. Mr. Petty was informed that the system had to take a minimum of 6 samples per month to test for total and fecal coliform, specifically, five from Pressure Plane #1 and one from Pressure Plane #2.

Track # 296430
§290.46(m)(1)(A) Design and Construction of Storage Tanks
Failure to inspect both the ground storage and pressure tanks at least annually, to determine that the vents are in place and properly screened, the roof hatches closed and locked, flap valves and gaskets provide adequate protection
against insects, rodents, and other vermin, and that the interior and exterior coating systems are continuing to provide adequate protection to all metal surfaces and that the tank remains in a watertight condition. The results of these inspections must be recorded and maintained for at least five years, per §290.46(f)(3)(D)(ii). The records must be available for review by Commission staff during annual sanitary surveys of the system.

On the day of the investigation, the system had not conducted tank inspection reports for all of the ground storage, pressure tank, and elevated tanks. They system was informed that these inspections must be done on an annual basis.

Track # 296432
§290.46(j)
Failure to complete a customer service inspection certification on new connections.

On the day of the investigation, the system did not have any customer service inspection certificates available for review. Mr. Petty was advised that all new additions to the system were required to have a customer service inspection completed.

5. ALLEGED VIOLATIONS NOTED AND RESOLVED

Track # 296434
§290.121 Monitoring Plans
Failure by the regulated entity to develop and maintain an up to date system monitoring plan. The plan shall identify all bacteriological and chemical sampling locations, describe the sampling frequency, and specify the analytical procedures and laboratories to be used to comply with monitoring requirements. The completed plan must be retained at each water plant, and made available to agency personnel for review during succeeding sanitary surveys.

On the day of the investigation it was noted that the system did not have a monitoring plan available for review.

Resolution: On October 24, 2007, Mr. Petty hand-delivered a copy of the system's Monitoring Plan. This information appears to adequately resolve the alleged violation.

6. ADDITIONAL ISSUES

6. ADDITIONAL ISSUES

NOV Date	Method
01/03/2008	WRITTEN

OUTSTANDING ALLEGED VIOLATIONS

Track No: 296397 **Compliance Due Date: 04/03/2008**

30 TAC Chapter 290.38(25)
30 TAC Chapter 290.41(c)(3)(O)

Alleged Violation:
Investigation: 611912 Comment Date: 12/12/2007

Failure to provide an intruder-resistant fence in order to protect Well #7, # 9, and #11. In addition, wells # 5, #4, and #3 must have a fence that is extending outward at a 45 degree angle. The fence must be at least six feet high and constructed of wood, concrete, masonry, or metal with three strands of barbed wire extending outward from the top of the fence at a 45 degree angle. In lieu of the barbed wire, the fence must be eight feet in height. The fence must be in good condition, and close enough to surface grade to prevent intruder passage, and kept locked when unattended. In lieu of a fence, wells, storage tanks, or pressure maintenance facilities may be installed in a vented, lockable building designed to prevent intruder access.

§290.38(25) Intruder-resistant fence -- A fence six feet or greater in height, constructed of wood, concrete, masonry, or metal with three strands of barbed wire extending outward from the top of the fence at a 45 degree angle with the smooth side of the fence on the outside wall. In lieu of the barbed wire, the fence must be eight feet in height. The fence must be in good repair and close enough to surface grade to prevent intruder passage. [§290.41(c)(3)(O)] All completed well units shall be protected by intruder-resistant fences, the gates of which are provided with locks or shall be enclosed in locked, ventilated well houses to exclude possible contamination or damage to the facilities by trespassers. The gates or wellhouses shall be locked during periods of darkness and when the plant is unattended.

Recommended Corrective Action: Submit photographs demonstrating that the fence and barbed wire at each of the well sites and pump stations is in accordance with 30 TAC §290.41(c)(3)(O) and §290.38(25).

Resolution:

Track No: 296399 **Compliance Due Date: 02/04/2008**

30 TAC Chapter 290.41(c)(3)(K)

Alleged Violation:
Investigation: 611912 Comment Date: 12/12/2007

Failure to seal the wellheads for Well # 9 (G1840027I) with the use of gaskets or a pliable crack-resistant caulking compound.

§290.41(c)(3)(K) Wellheads and pump bases shall be sealed by a gasket or sealing compound and properly vented to prevent the possibility of contaminating the well water. A well casing vent shall be provided with an opening that is covered with 16-mesh or finer corrosion-resistant screen, facing downward, elevated and located so as to minimize the drawing of contaminants into the well. Wellheads and well vents shall be at least two feet above the highest known watermark or 100-year flood elevation, if available, or adequately protected from possible flood damage by levees.

Recommended Corrective Action: Submit photographs demonstrating that the wellhead for Well #9 (G1840027I) has been properly sealed to prevent contamination.

Resolution:

Track No: 296401 **Compliance Due Date: 02/04/2008**

30 TAC Chapter 290.41(c)(3)(K)

Alleged Violation:
Investigation: 611912 Comment Date: 12/12/2007

Failure to provide well #11 (G1840027K) with a screened casing vent, which must face downward and be elevated so as to minimize the drawing of contaminants into the well. The screening must be l6-mesh or finer corrosion-resistant screen.

§290.41(c)(3)(K) Wellheads and pump bases shall be sealed by a gasket or sealing compound and properly vented to prevent the possibility of contaminating the well water. A well casing vent shall be provided with an opening that is covered with 16-mesh or finer corrosion-resistant screen, facing downward, elevated and located so as to minimize the drawing of contaminants into the well. Wellheads and well vents shall be at least two feet above the highest known watermark or 100-year flood elevation, if available, or adequately protected from possible flood damage by levees.

Recommended Corrective Action: Submit photographs demonstrating that a proper wellhead for Well #11 (G1840027K) has been installed.

Resolution:

Track No: 296402 **Compliance Due Date: 04/03/2008**

30 TAC Chapter 290.41(c)(1)(F)

Alleged Violation:
Investigation: 611912 Comment Date: 12/12/2007

Failure to make available sanitary control easements for all of the wells at the time of inspection, or executive director approval for a substitute authorized in §290.41(c)(1)(F)(iv). A sanitary easement, or approved substitute, covering all property within 150 feet of each well location must be secured from adjacent landowners and recorded at the county courthouse to ensure that hazards will not develop in each well area. Residential type wells within the easement must be constructed to public water well standards. A copy of the recorded document must be submitted for our records.

§290.41(c)(1)(F) A sanitary control easement or sanitary control easements covering land within 150 feet of the well, or executive director approval for a substitute authorized by this subsection, shall be obtained. [§290.41(c)(1)(F)(i)] The sanitary control easement(s) secured shall provide that none of the pollution hazards covered in subparagraphs (A) - (E) of this paragraph, or any facilities that might create a danger of pollution to the water to be produced from the well, will be located thereon. [§290.41(c)(1)(F)(ii)] For the purpose of a sanitary control easement, an improperly constructed water well is one which fails to meet the surface and subsurface construction standards for public water supply wells. Residential type wells within a sanitary control easement must be constructed to public water well standards. [§290.41(c)(1)(F)(iii)] A copy of the recorded sanitary control easement(s) shall be included with plans and specifications submitted to the executive director for review. [§290.41(c)(1)(F)(iv)] With the approval of the executive director, the public water system may submit any of the following as a substitute for obtaining, recording, and submitting a copy of the recorded sanitary control easement(s) covering land within 150 feet of the well: [§290.41(c)(1)(F)(iv)(I)] a copy of the recorded deed and map demonstrating that the public water system owns all real property within 150 feet of the well; [§290.41(c)(1)(F)(iv)(II)] a copy of the recorded deed and map demonstrating that the public water system owns a portion of real property within 150 feet of the well, and a copy of the sanitary control easement(s) that the public water system has obtained, recorded, and submitted to the executive director applicable to the remaining portion of real property within 150 feet of the well not owned by the public water system; or [§290.41(c)(1)(F)(iv)(III)] for a political subdivision, a copy of an ordinance or land use restriction adopted and enforced by the political subdivision which provides an equivalent or higher level of sanitary protection to the well as a sanitary control easement. [§290.41(c)(1)(F)(v)] If the executive director approves a sanitary control easement substitute identified in clause (iv)(I) or (iv)(II) of this

subparagraph for a public water system and the public water system conveys the property it owns within 150 feet of the well to another person or persons, the public water system must at that time obtain, record, and submit to the executive director a copy of the recorded sanitary control easement(s) applicable to the conveyed portion of the property within 150 feet of the well, unless the executive director approves a substitute identified in clause (iv) of this subparagraph.

Recommended Corrective Action: Submit a photocopy of the recorded sanitary control easements OR a photocopy of the approved substitute OR a granted exception request from the Water Supply Division.

Resolution:

Track No: 296405 **Compliance Due Date: 04/03/2008**

30 TAC Chapter 290.41(c)(3)(J)

Alleged Violation:
Investigation: 611912 Comment Date: 12/12/2007

Failure to provide a concrete sealing block surrounding Well #9 (G1840027I) which extends at least three feet from the well casing in all directions, with a minimum thickness of six inches and sloped to drain away at not less than 0.25 inches per foot shall be provided around the wellhead.

§290.41(c)(3)(J) In all cases, a concrete sealing block extending at least three feet from the well casing in all directions, with a minimum thickness of six inches and sloped to drain away at not less than 0.25 inches per foot shall be provided around the wellhead.

Recommended Corrective Action: Submit photographs demonstrating a proper concrete sealing block surrounding Well #9 (G1840027I).

Resolution:

Track No: 296407 **Compliance Due Date: 04/03/2008**

30 TAC Chapter 290.42(e)(4)(C)

Alleged Violation:
Investigation: 611912 Comment Date: 12/12/2007

Failure to provide the chlorination room with both high level and floor level screened vents. If the room contains more than one operating 150 pound cylinder of chlorine, a fan which is located at and draws air in through the top vent and discharges to the outside atmosphere through the floor level vent must be provided, with the fan switch located outside the enclosure.

§290.42(e)(4)(C) Adequate ventilation, which includes both high level and floor level screened vents, shall be provided for all enclosures in which gas chlorine is being stored or fed. Enclosures containing more than one operating 150-pound cylinder of chlorine shall also provide forced air ventilation which includes: screened and louvered floor level and high level vents; a fan which is located at and draws air in through the top vent and discharges to the outside atmosphere through the floor level vent; and a fan switch located outside the enclosure. Alternately, systems may install negative pressure ventilation as long as the facilities also have gas containment and treatment as prescribed by the current Uniform Fire Code (UFC).

Recommended Corrective Action:
Submit photographs demonstrating that the chlorine room at the Ground Storage Pump Station is equipped with both a high level and floor level screened vent.

Resolution:

Track No: 296408 **Compliance Due Date: 04/03/2008**

30 TAC Chapter 290.42(l)

Alleged Violation:
Investigation: 611912 Comment Date: 12/12/2007

Failure to provide a Plant Operations Manual.

§290.42(l) Plant operations manual. A thorough plant operations manual must be compiled and kept up-to-date for operator review and reference. This manual should be of sufficient detail to provide the operator with routine maintenance and repair procedures, with protocols to be utilized in the event of a natural or man-made catastrophe, as well as provide telephone numbers of water system personnel, system officials, and local/state/federal agencies to be contacted in the event of an emergency.

Recommended Corrective Action: Submit complete copy of plant operations manual

Resolution:

Track No: 296409 **Compliance Due Date: 02/04/2008**

30 TAC Chapter 290.42(e)(5)

Alleged Violation:
Investigation: 611912 Comment Date: 12/12/2007

Failure to provide a solution container lid which must be properly covered and sealed to prevent the entry of dust, insects, and other contaminants.

§290.42(e)(5) Hypochlorination solution containers and pumps must be housed in a secure enclosure to protect them from adverse weather conditions and vandalism. The solution container top must be completely covered to prevent the entrance of dust, insects, and other contaminants.

Recommended Corrective Action: Submit photographs demonstrating that the hypochlorinator at the Fox Hunt Pump Station has been properly covered and sealed.

Resolution:

Track No: 296411 **Compliance Due Date: 02/04/2008**

30 TAC Chapter 290.43(c)(3)

Alleged Violation:
Investigation: 611912 Comment Date: 12/12/2007

Failure to provide a properly designed overflow pipe which is equipped with a gravity -hinged and weighted cover at the Willow Wood, Willow Springs, and Willow Springs Oaks Pump Station ground storage tanks. The cover must seat properly with a gap of no more than 1/16 inch.

§290.43(c)(3) Overflows shall be designed in strict accordance with current AWWA standards and shall terminate with a gravity-hinged and weighted cover. The cover shall fit tightly with no gap over 1/16 inch. If the overflow terminates at any point other than the ground level, it shall be located near enough and at a position accessible from a ladder or the balcony for inspection purposes. The overflow(s) shall be sized to handle the maximum possible fill rate without exceeding the capacity of the overflow(s). The discharge opening of the overflow(s) shall be above the surface of the ground and shall not be subject to submergence.

Recommended Corrective Action: Submit photographs demonstrating that the overflow pipes at the Willow Wood, Willow Springs, and Willow Springs Oaks Pump Station have gaps no greater than 1/16th inches.

Resolution:

Track No: 296412 **Compliance Due Date: 04/03/2008**

30 TAC Chapter 290.43(c)(4)

Alleged Violation:
Investigation: 611912 Comment Date: 12/12/2007

Failure to equip each of the ground storage tanks at the Ground Storage Pump Station with a water level indicator located at the tank site. The indicator may be a float with a moving target, an ultrasonic level indicator, or a pressure gauge calibrated in feet of water. Pressure gauges must be not less than 3 inches in diameter and calibrated at not more than 2 foot intervals.

§290.43(c)(4) All clearwells and water storage tanks shall have a liquid level indicator located at the tank site. The indicator can be a float with a moving target, an ultrasonic level indicator, or a pressure gauge calibrated in feet of water. If an elevated tank or standpipe has a float with moving target indicator, it must also have a pressure indicator located at ground level. Pressure gauges must not be less than three inches in diameter and calibrated at not more than two-foot intervals. Remote reading gauges at the owner's treatment plant or pumping station will not eliminate the requirement for a gauge at the tank site unless the tank is located at the plant or station.

Recommended Corrective Action: Submit photographs demonstrating that each of the 0.5 MG ground storage tanks has a water level indicator.

Resolution:

Track No: 296414 **Compliance Due Date: 04/03/2008**

30 TAC Chapter 290.45(b)(1)(C)(iii)

Alleged Violation:
Investigation: 611912 Comment Date: 12/12/2007

Failure to meet this Agency's "Minimum Water System Capacity Requirements." These requirements include: a well capacity of 0.6 gallons per minute per connection at Pressure Plane #1. Your water system must be modified to meet this requirement to assure an adequate supply of water at all times.

Please be advised that public water systems shall notify the executive director prior to making any significant change or addition to the system's production, treatment, storage, or distribution facilities. Public water systems shall submit plans and specifications for the proposed changes upon request.

The water system may request an exception to these requirements by writing to TCEQ, Water Supply Division, Public Drinking Water Section, Technical Review & Oversight, MC 155, P.O. Box 13087, Austin, TX 78711-3087; phone: (512) 239-4798.

§290.45 Minimum Water System Capacity Requirements.§290.45(b) Community water systems. [§290.45(b)(1)(C)] For 50 to 250 connections, the system must meet the following requirements: §290.45(b)(1)(D) For more than 250 connections, the system must meet the following requirements:
§290.45(b)(1)(D)(i) two or more wells having a total capacity of 0.6 gpm per connection. Where an interconnection is provided with another acceptable water system capable of supplying at least 0.35 gpm for each connection in the combined system under emergency conditions, an additional well will not be required as long as the 0.6 gpm per connection requirement is met for each system on an individual basis. Each water system must still meet the storage and pressure maintenance requirements on an individual basis unless the interconnection is permanently open. In this case, the systems' capacities will be rated as though a single system existed;

Recommended Corrective Action: Submit documentation demonstrating the system is providing a total well capacity of 0.6 GPM per connection for Pressure Plane #1.

Resolution:

Track No: 296417 Compliance Due Date: 04/03/2008

30 TAC Chapter 290.46(s)(1)

Alleged Violation:
Investigation: 611912 Comment Date: 12/12/2007

Failure to calibrate flow measuring devices and rate-of-flow controllers that are required by §290.42(d) of this title at least once every 12 months.

§290.46(s)(1) Flow measuring devices and rate-of-flow controllers that are required by §290.42(d) of this title shall be calibrated at least once every 12 months. Well meters required by §290.41(c)(3)(N) of this title shall be calibrated at least once every three years.

Recommended Corrective Action: Submit compliance documentation demonstrating *flow measuring devices on wells have been calibrated in the last 12 months.*

Resolution:

Track No: 296418 **Compliance Due Date: 04/03/2008**

30 TAC Chapter 290.46(m)

Alleged Violation:
Investigation: 611912 Comment Date: 12/12/2007

Failure to properly maintain all of the chlorine room doors located at each of the pump stations.

§290.46(m) Maintenance and housekeeping. The maintenance and housekeeping practices used by a public water system shall ensure the good working condition and general appearance of the system's facilities and equipment. The grounds and facilities shall be maintained in a manner so as to minimize the possibility of the harboring of rodents, insects, and other disease vectors, and in such a way as to prevent other conditions that might cause the contamination of the water.

Recommended Corrective Action: Submit photographs demonstrating that the doors have been replaced or repaired such that the doors can properly close at each of the pump stations.

Resolution:

Track No: 296419 **Compliance Due Date: 04/03/2008**

30 TAC Chapter 290.46(t)

Alleged Violation:
Investigation: 611912 Comment Date: 12/12/2007

Failure to post a legible sign at each of its production, treatment, and storage facilities by each community system. The sign must be located in plain view of the public and must provide the name of the regulated entity and an emergency telephone number where a responsible official can be contacted.

§290.46(t) System ownership. All community water systems shall post a legible sign at each of its production, treatment, and storage facilities. The sign shall be located in plain view of the public and shall provide the name of the water supply and an emergency telephone number where a responsible official can be contacted.

Recommended Corrective Action: Submit photographs demonstrating that the Fox *Hunt Pump Station has an ownership sign on display.*

Resolution:

Track No: 296420 **Compliance Due Date: 04/03/2008**

30 TAC Chapter 290.46(n)(3)

Alleged Violation:
Investigation: 611912 Comment Date: 12/12/2007

Failure to provide well completion data on the day of the investigation.

§290.46(n) Engineering plans and maps. Plans, specifications, maps, and other pertinent information shall be maintained to facilitate the operation and maintenance of the system's facilities and equipment. The following records shall be maintained on file at the public water system and be available to the executive director upon request. §290.46(n)(3) Copies of well completion data such as well material setting data, geological log, sealing information (pressure cementing and surface protection), disinfection information, microbiological sample results, and a chemical analysis report of a representative sample of water from the well shall be kept on file for as long as the well remains in service.

Recommended Corrective Action: Submit a photocopy of the well driller's log OR a photocopy of the approved substitute OR a granted exception request from the Water Supply Division for Wells # 11, Willow Springs North, and Willow Springs South.

Resolution:

Track No: 296422 **Compliance Due Date: 04/03/2008**

30 TAC Chapter 290.46(n)(2)

Alleged Violation:
Investigation: 611912 Comment Date: 12/12/2007

Failure to have an accurate and up-to-date map of the distribution system available so that valves and mains can be easily located during emergencies.

§290.46(n)(2) An accurate and up-to-date map of the distribution system shall be available so that valves and mains can be easily located during emergencies.

Recommended Corrective Action: Submit an up-to-date map of the distribution system in accordance with 30 TAC §290.46(n)(2) .

Resolution:

Track No: 296424 **Compliance Due Date: 02/04/2008**

30 TAC Chapter 290.46(m)(4)

Alleged Violation:
Investigation: 611912 Comment Date: 12/12/2007

Failure to repair the leak on the 500 gallon pressure tank at the Willow Springs Pump Station.

§290.46(m) Maintenance and housekeeping. The maintenance and housekeeping practices used by a public water system shall ensure the good working condition and general appearance of the system's facilities and equipment. The grounds and facilities shall be maintained in a manner so as to minimize the possibility of the harboring of rodents, insects, and other disease vectors, and in such a way as to prevent other conditions that might cause the contamination of the water. [§290.46(m)(4)] All water treatment units, storage and pressure maintenance facilities, distribution system lines, and related appurtenances shall be maintained in a watertight condition and be free of excessive solids.

Recommended Corrective Action: Submit compliance documentation indicating that the leak in the pressure tank has been repaired or the tank has been replaced.

Resolution:

Track No: 296425 **Compliance Due Date: 04/03/2008**

30 TAC Chapter 290.46(f)(3)(B)(vi)

Alleged Violation:
Investigation: 611912 Comment Date: 12/12/2007

Failure to maintain backflow prevention assembly test and maintenance reports for a minimum of three years. The regulated entity must provide these records to Commission staff for inspection upon request.

§290.46(f)(3)(B) The following records shall be retained for at least three years: [§290.46(f)(3)(B)(vi)] the records of backflow prevention device programs.

Recommended Corrective Action: Submit copies of backflow prevention assembly certificates.

Resolution:

Track No: 296427 **Compliance Due Date: 02/04/2008**

30 TAC Chapter 290.46(b)

Alleged Violation:
Investigation: 611912 Comment Date: 12/12/2007

Failure to submit adequate number of samples for microbiological analysis.

§290.46(b) Microbiological. Submission of samples for microbiological analysis shall be as required by Subchapter F of this chapter (relating to Drinking Water Standards Governing Drinking Water Quality and Reporting Requirements for Public Water Systems). Microbiological samples may be required by the executive director for monitoring purposes in addition to the routine samples required by the drinking water standards. These samples shall be submitted to a certified laboratory. (A list of the certified laboratories can be obtained by contacting the executive director).

Recommended Corrective Action: Submit copies of bacteriological sample analysis from each pressure plane.

Resolution:

Track No: 296430 **Compliance Due Date: 04/03/2008**

30 TAC Chapter 290.46(m)(1)(A)

Alleged Violation:
Investigation: 611912 Comment Date: 12/12/2007

Failure to inspect both the ground storage and pressure tanks at least annually, to determine that the vents are in place and properly screened, the roof hatches closed and locked, flap valves and gaskets provide adequate protection against insects, rodents, and other vermin, and that the interior and exterior coating systems are continuing to provide adequate protection to all metal surfaces and that the tank remains in a watertight condition. The results of these inspections must be recorded and maintained for at least five years, per §290.46(f)(3)(D)(ii). The records must be available for review by Commission staff during annual sanitary surveys of the system.

§290.46(m) Maintenance and housekeeping. The maintenance and housekeeping practices used by a public water system shall ensure the good working condition and general appearance of the system's facilities and equipment. The grounds and facilities shall be maintained in a manner so as to minimize the possibility of the harboring of rodents, insects, and other disease vectors, and in such a way as to prevent other conditions that might cause the contamination of the water. [§290.46(m)(1)] Each of the system's ground, elevated, and pressure tanks shall be inspected annually by water system personnel or a contracted inspection service.

Recommended Corrective Action: Submit copies of annual tank inspection reports for all of the ground storage, pressure, and elevated storage tanks.

Resolution:

Track No: 296432 **Compliance Due Date: 04/03/2008**

30 TAC Chapter 290.46(j)

Alleged Violation:
Investigation: 611912 Comment Date: 12/12/2007

Failure to complete a customer service inspection certification on new connections.

§290.46(j) Customer service inspections. A customer service inspection certificate shall be completed prior to providing continuous water service to new construction, on any existing service either when the water purveyor has reason to believe that cross-connections or other potential contaminant hazards exist, or after any material improvement, correction, or addition to the private water distribution facilities. Any customer service inspection certificate form which varies from the format found in §290.47(d) of this title (relating to Customer Service Inspection Certificate) must be approved by the executive director prior to being placed in use.

Recommended Corrective Action: Submit copies of most recent customer service inspection certificates completed on new additions to the system.

Resolution:
ALLEGED VIOLATIONS NOTED AND RESOLVED

Track No: 296434 **Resolution Date: December 12 07**

30 TAC Chapter 290.121

Alleged Violation:
Investigation: 611912 Comment Date: 12/12/2007

Failure by the regulated entity to develop and maintain an up to date system monitoring plan. The plan shall identify all bacteriological and chemical sampling locations, describe the sampling frequency, and specify the analytical procedures and laboratories to be used to comply with monitoring requirements. The completed plan must be retained at each water plant, and made available to agency personnel for review during succeeding sanitary surveys.

§290.121 Monitoring Plans Failure by the regulated entity to develop and maintain an up to date system monitoring plan. The plan shall identify all bacteriological and chemical sampling locations, describe the sampling frequency, and specify the analytical procedures and laboratories to be used to comply with monitoring requirements. The completed plan must be retained at each water plant, and made available to agency personnel for review during succeeding sanitary surveys.

Recommended Corrective Action: Submit documentation demonstrating that the system has compiled a complete Monitoring Plan, in accordance with §290.121.

Resolution: On October 24, 2007, Mr. Petty hand-delivered a copy of the system's Monitoring Plan. This information appears to adequately resolve the alleged violation.

Signed _____ Date 12-12-07
Environmental Investigator

Signed _____ Date 12/14/07
Supervisor

Attachments: (in order of final report submittal)

___Enforcement Action Request (EAR)
✓ Letter to Facility (specify type) NOV
Investigation Report
___Sample Analysis Results
___Manifests
___NOR
___Maps, Plans, Sketches
___Photographs
___Correspondence from the facility
✓ Other (specify) :
Monitoring Plan

REFERENCE 9

Monitoring Plan for the

City of Willow Park

516 Ranch House Rd. Willow Park, TX 76087

Date of Monitoring Plan: October 18, 2007
PWS ID 1840027 PARKER COUNTY, TEXAS
Responsible Official: Lance Petty – Director of Public Works
Water Supply Contact: Rudy Ragle, Superintendent, 817-441-2812

The City of Willow Park owns and operates 22 water wells, and sells water to the citizens of Willow Park. This system serves 5,897 people, with 1,685 connections.

The City of Willow Park has 22 wells: well 1, well 2, well 3, well 4, well 5, well 6p, well 6t, well 7, well 8, well 9, well 10, well 11, well 14, well 15, well 16p, well 16t, WWN , WWS, El Chico, WSN, WSS, WSO. All wells are active except for well 8 (plugged), and El Chico. Well's 7, 9, 10, and El Chico can be used in emergency situations. The well water is pumped into collection lines to storage tanks throughout the water system. The water system has 6 pump stations, 16 total booster pumps, with the three at El Chico for emergency purposes. The system has 3 elevated storage tanks that equal 625,000 gallons of storage, with 7 ground storage tanks that equal 1,180,000 gallons of storage equaling 1,805,000 gallons of total storage. The system consists of 2 pressure plains.

A. RAW WATER SAMPLING

WE ARE NOT REQUIRED TO TAKE RAW WATER SAMPLES.

B. IN – PLANT SAMPLING

Table B-1. Example of table of treatments used at our groundwater treatment plants.

	Treatment	Comments
Well 1 Well 2 Well 3 Well 4 Well5 Well 6p Well 6t Well 14 Well 15	Chlorine Gas	Ground storage tanks
Well 16p Well 16t	Liquid Chlorine	Ground storage tank
WWN WWS Well 11	Liquid Chlorine	Ground storage tank
El Chico Well 7 Well 9 Well 10 **Well 8**	Liquid Chlorine/ Gas chlorine **Well Plugged**	These wells are used on emergency basis and are chlorinated at the well heads.
WSN WSS	Liquid Chlorine	Ground storage tanks
WSO	Liquid Chlorine	Ground storage tanks

Chlorine residuals are taken daily at all treatment sites and are recorded on the DLQOR reports.

C. Entry point Sampling

1. Disinfectant entering the distribution system

This system is in compliance if the free chlorine residual entering the distribution system is over 0.2 mg/l.

2. Organics, In-organics, and Radio-chemicals.

a. Frequency
   The TCEQ'S sampling contractor collects these samples: Letters are attached.
b. Location
   Entry point 011, 010, 001
c. Samples are sent to the Texas Department of State Health Services.

D. Distribution System Sampling

The distribution system consists of collection lines that carry the ground water to the storage facilities for treatment. The source of water is ground from the upper and lower Trinity aquifer's, once the water is into the storage facilities, then the water is treated with either liquid cl2 or gas cl2, then is pumped into the distribution system. The system consist of two pressure plains, one plain is north of Interstate I-20 and one is south of Interstate I-20. North of I-20 the system has 13 wells, and 500,000 gallons of overhead storage capacity and 1,000,060 gallons of ground storage capacity. Well's 7, 9, 10 and El Chico wells on emergency basis only. South of I-20 the system has 4 well's and 125,000 gallons of overhead storage capacity, and 90,000 gallons of ground storage capacity. The system south of I-20 has a interconnect valve at the corner of Bankhead Rd. and Kingswood Dr. this interconnect valve is in the open position.

1. Coli form Samples

The system collects four coli form samples per month. These samples are collected during the first week of every month, the location of the samples are listed below:

a. 138 Northchase – **south on Crown Rd., turn left onto Ranch House Rd. (s. east), turn left onto Northchase. Pull sample at 138 Northchase.**
b. 374 Spyglass – **south on Crown Rd., turn left onto Ranch House Rd. (s. east), cross under I-20, turn left on Bankhead Rd. go east, turn left onto Pebble Beach, turn left onto Spyglass. Pull sample at 374 Spyglass.**
c. 101 Stagecoach Trail – **south on Crown Rd., turn left onto Ranch House Rd. (s. east), turn right (west) onto Stagecoach Trail. Pull sample at 101 Stagecoach Trail.**

d. 500 Deer Pond- **south on Crown Rd., turn left onto Mikus Rd. (south), go under I-20, turn right onto Deer Pond. Pull sample at 500 Deer Pond.**
e. 108 Kingwood – **south on Crown Rd., turn left onto Mikus Rd. (south), go under I-20, turn left onto I-20 Service Rd. eastbound, turn right onto Kingswood. Pull sample at 108 Kingswood.**

f. Samples are sent to the Tarrant County Public Health Department for analysis. Phone number is 817-321-4750

2. Disinfectant Residual – Free

a. Residuals are taken daily and recorded on the DLQOR reports.
b. The daily residuals are taken daily from every pump station's and storage facilities.
c. Hach colorimeter is used to measure disinfectant residual.
d. This system reports the DLQOR report to the TCEQ quarterly.

3. Disinfection Byproducts (DBP'S) –TTHM and HAA5

This system has more than one entry point.

3. Lead – Copper

a. Frequency testing (state notification)
b. Location: Pressure plain north of I-20
801 Sam Bass
805 Kingsgate
3308 Camelot
733 Royal View Ct.
152 Regent Row Ct.
316 Fairway
509 Willow Park Dr.
416 Jerri Ridge
400 Vista
101 Stagecoach Tr.

Pressure Plain south of I-20
4825 Quail Crest
116 Kingswood
608 Deer Pond
504 Big Creek
109 Circle Dr.

E. Lab Approval Form – N/A

1. ENTRY POINT SAMPLING

a. List of entry point

Entry point	Sample site	Source	Plant name
001 010 011	Hose bib on house Hose bib on house Hose bib on house	Trinity aquifer	Wells 1, 2, 3, 4, 5, 6p, 6t, 14, 15, 16p, 16t, 11, WWN, WWS

2. Disinfectant entering the distribution system

Our system uses both liquid and gas chlorine. There is chlorine at every storage facility and at every emergency well head. The City of Willow Park provides water with a chlorine residual throughout the distribution system.

a. We record a chlorine residual at every storage facility daily.
b. The residual is measured at every entry point in the system.
c. Each entry point is equipped with self priming D10 chlorine pumps.
d. Chlorine is measured using the Hach colorimeter.
e. The system is in compliance if the free chlorine residual is over 0.2 mg/l, we maintain a residual of at least 1.0 at each entry point.

3. Organic chemicals, In-organic chemicals, and radio-chemicals

a. The TCEQ sampling contractor collects theses samples.
b. The TCEQ will notify system of violations

4. Chlorine Dioxide

We do not use chlorine dioxide.

5. Chlorite

We do not use chlorine dioxide, so this requirement does not apply to us.

6. Bromate

We do not use ozone, so this requirement does not apply to us.

D. Distribution System Sampling

The main distribution system is the City of Willow Park. There are sampling locations at four areas in the system.

1. Coil form Samples

List of coli form sampling sites

Site no.	Address	Mo. Sampled for coli form
A	138 Northchase	Jan/Mar/May July/Sep/Nov
B	108 Kingswood	
C	101 Stagecoach	monthly
D	500 Deer Pond	Feb/Apr/June Aug/ Oct/ Dec
E	374 Spyglass	

We are required to take 3 coli form samples a month. We are required to have 5 coli form sample sites, we use 5 to be sure we check the whole system.

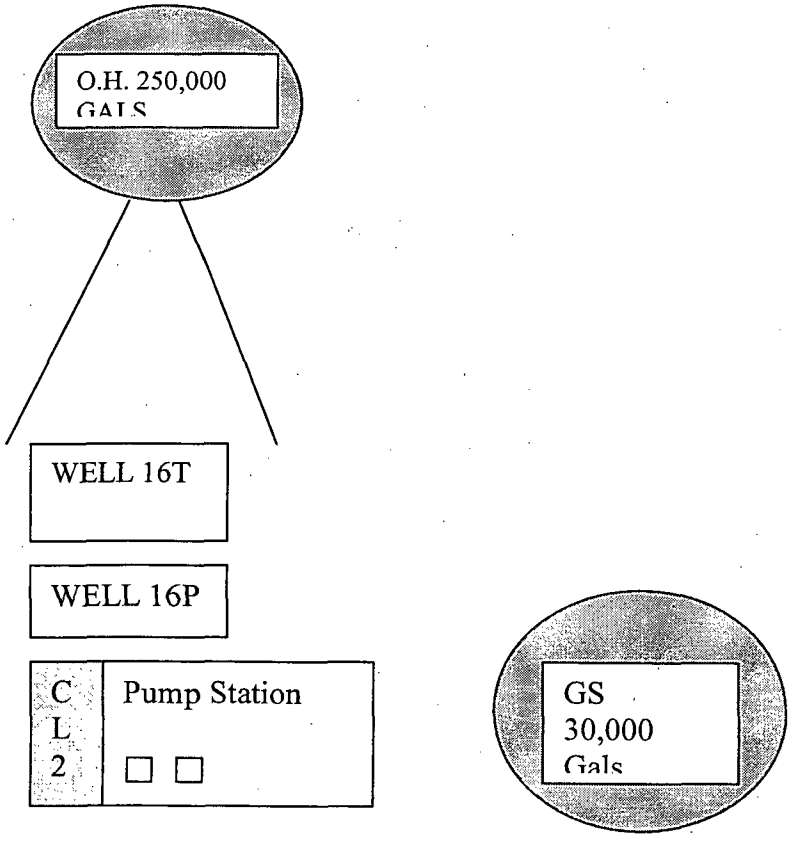
A. Location: samples are cycled as shown in table above.
B. Method: Coli form samples are sent to:
   Tarrant County Public Health
   1101 S. Main St. Ft. Worth, TX 76104
   USEPA LAB NO. 01471 817-321-4750

City of Willow Park PWS ID. 1840027

City of Willow Park

1,685 connections

Fox Hunt
PUMP STATION

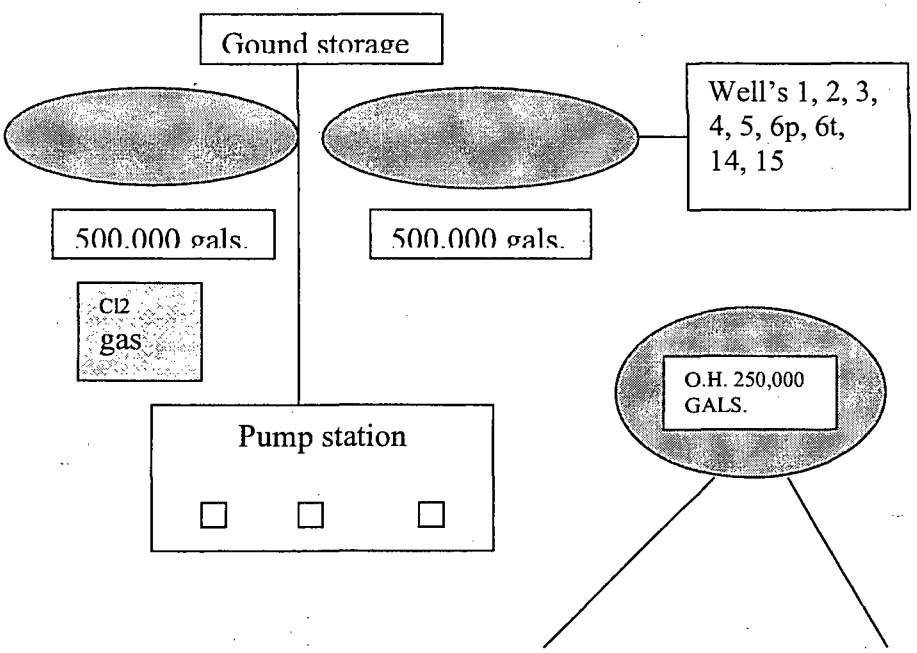


16 P – produces 22 gpm
16 T – produces 20 gpm

City of Willow Park

1,685 connections

Ground Storage
PUMP STATION



WELL 1 – 75 GPM
WELL 2 – 23 GPM
WELL 3 – 74 GPM
WELL 4 – 53 GPM
WELL 5 – 77 GPM
WELL 6P – 66 GPM
WELL 6T – 105 GPM
WELL 14 – 75 GPM
WELL 15 – 110 GPM

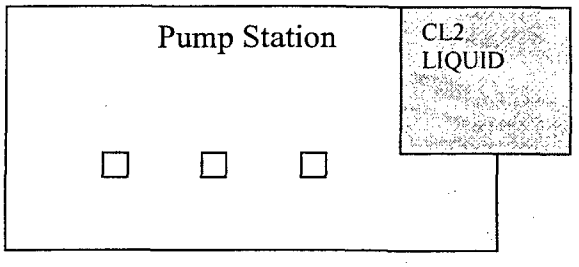
City of Willow Park PWS ID # 1840027

City of Willow Park

1,685 connections

Willow Wood
PUMP STATIONS

WELL 11, WWN,
WWS



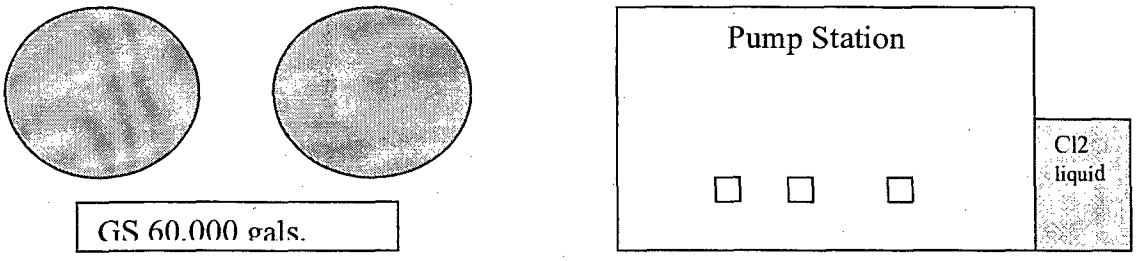
WELL 11 – 47 GPM
WWN – 55 GPM
WWS – 35 GPM

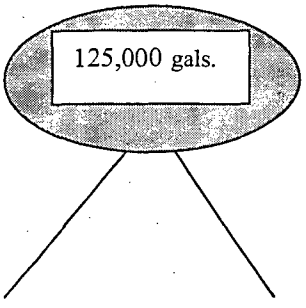
City of Willow Park

1,685 connections

Willow Springs Oaks

PUMP STATION

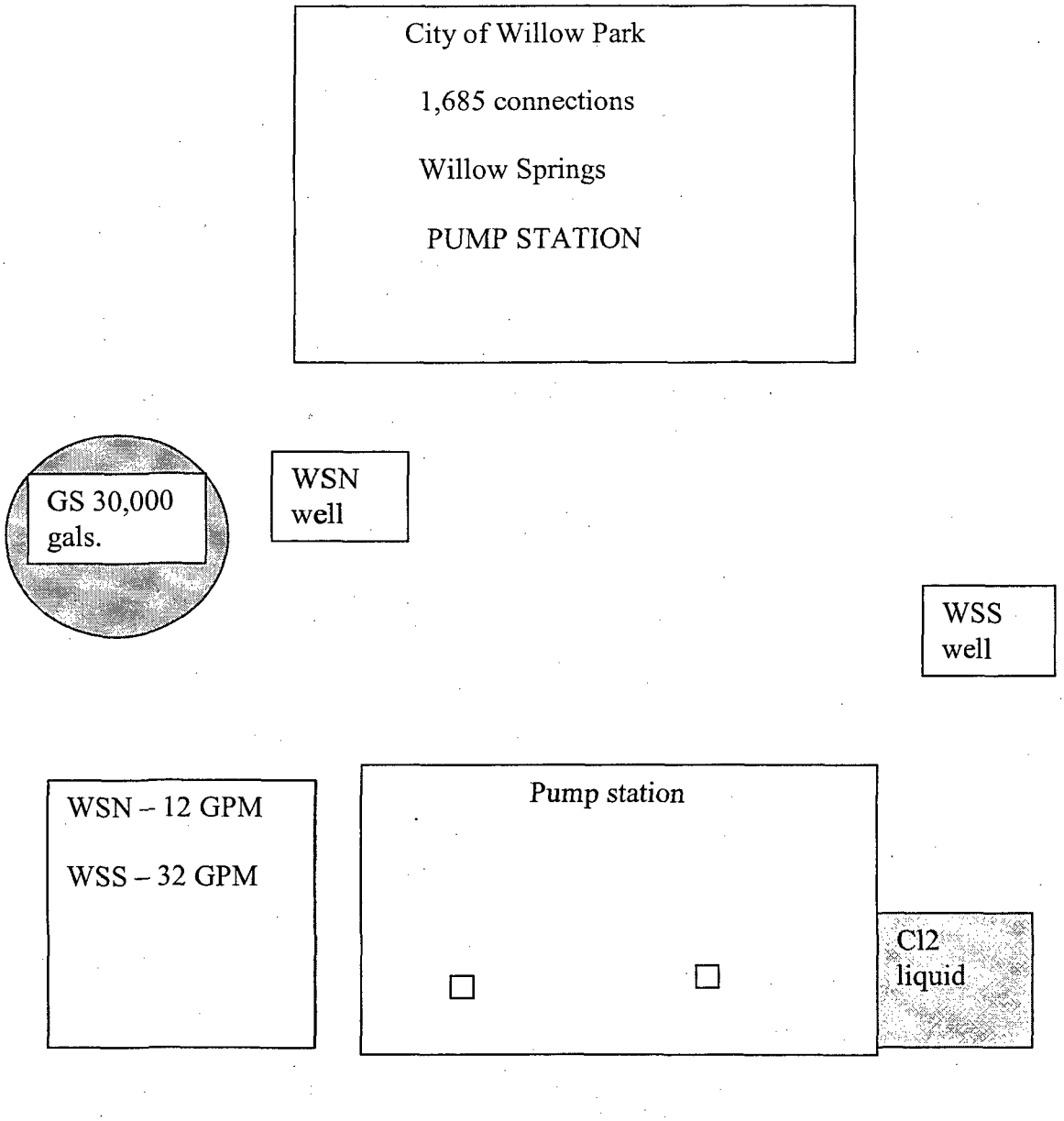




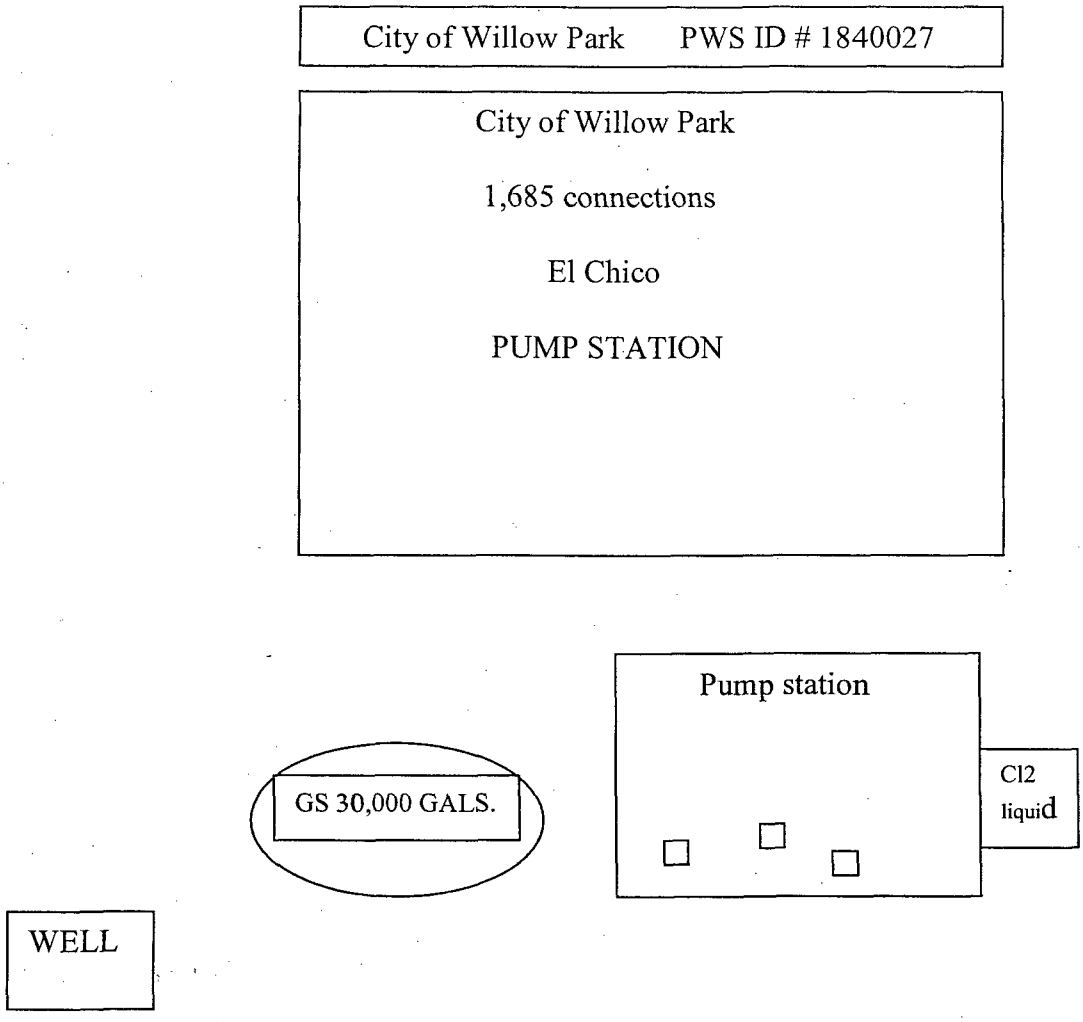
WSO
WELL

WSO – 57 GPM

City of Willow Park PWS ID # 1840027



Note: The Willow Springs plant and the Willow Springs Oaks plants have a interconnect valve at the corner of Bankhead and Kingswood Rd. This valve is in the open position.



Note: El Chico is on emergency basis only and is chlorinated at the storage.

Note: Well's 7, 9, and 10 are used on emergency basis only and are chlorinated at the well head.

Well 8 is Plugged. See: Plugged report attached to Monitoring Plan.

2. DISINFECTANT RESIDUAL – FREE OR TOTAL CHLORINE

List of Disinfectant Sampling Sites

Site no.	Address		Days sampled
a.	3500 Indian Camp	(ground storage)	Daily
b.	1109 Fox Hunt	(Fox Hunt)	Daily
c.	3324 Forrest Circle	(Willow Wood)	Daily
d.	117 Circle	(Willow Springs Oaks)	Daily
e.	4821 Quail Crest	(Willow Springs)	Daily

The disinfectant residual is measured on a daily basis. The residual is measured using the Hach colorimetric method.

Disinfectant residuals are reported quarterly to the TCEQ on the DLQOR Report.

The system is in compliance with the minimum residual requirement if the free chlorine residual throughout the distribution system is greater than 0.2 mg/l.

The system is in compliance with the maximum residual disinfectant limit if the running annual average of all samples taken in the distribution system is less than 4.0 mg/l.

REFERENCE 10

PWS / 1840027 / CO
CN60066637
RN10124244

Texas Commission on Environmental Quality

Protecting Texas by Reducing and Preventing Pollution

January 20, 2009

SCE2009M

MARVIN GLASGOW, MAYOR (RESPONSIBLE OFFICIAL)
CITY OF WILLOW PARK (LEGAL ENTITY)
516 RANCH HOUSE RD
WILLOW PARK, TX 76087-7626

SUBJECT: Public Drinking Water System - **WILLOW PARK MUNICIPAL SYSTEM**
Year 2009 Chemical Sampling Schedule and Cost ESTIMATE, and Monitoring Frequency Status Report
(THIS IS NOT A BILL)

Dear Water System Official:

Enclosed are reports of sampling requirements and sample collection schedules for your water system, along with an estimate of analysis costs during calendar year 2009.

* The first report, titled "Monitoring Frequency Status," describes all of your system's current chemical monitoring required by the Texas Administrative Code (TAC) Chapter 30, Subchapter F. The second report, titled "Year 2009 Estimated Chemical Sampling Costs," lists the type and approximate analysis cost for each sample currently scheduled for 2009. This is only an estimate. DO NOT SEND PAYMENT TO TCEQ.
* The "Explanation for CHEMICAL SAMPLE COST ESTIMATE AND MONITORING FREQUENCY STATUS REPORTS" is also enclosed and available online at <www.tceq.state.tx.us/goto/pws/sampling/key>.
* TCEQ collects chemical samples through a sampling contractor: Delta Consultants (Delta) at (512) 990-7467, (800) 477-7411, or <http://www.deltaenv.com>. A Delta representative will contact you to schedule a sampling appointment. A water system official must accompany the sampler during collection.
* You should attach a copy of this letter and reports to your Monitoring Plan for reference.

You must keep chemical records for ten years and update your contact information.
You must be prepared to make these records available to the general public and TCEQ upon request. If your system has a change in ownership, responsible official, address, phone number, etc., you must inform the TCEQ in writing. This information can be viewed using the Integrated Water Utilities Database (iWUD) on the internet at <http:/www10.tceq.state.tx.us/iwud/>. If any information in iWUD is incorrect for your system, please notify us by email at: <pdws@tceq.state.tx.us>, or by mail at the letterhead address.

You must maintain an up-to-date monitoring plan that lists sample sites and indicates them on a map.
Your system's operator must have the Monitoring Plan available for the Delta sample collector at each sampling event. Failure to do so is a violation. On the web, search "Monitoring Plan" from TCEQ's home page for more information.

Your chemical compliance samples (except for lead and copper samples) are collected by Delta or its subcontractor in the North office and shipped to the LCRA laboratory in Austin. The laboratory will send you the sample results and a bill for the cost of analysis. If you have billing questions, please contact LCRA at (512) 356-6022 directly. All radionuclide sampling will be analyzed and billed from DSHS laboratories. UCMR samples will be analyzed and billed by LCRA. Lead and copper samples will be collected by your customers and should be shipped for analysis to LCRA at (877) 362-5272 (toll free). Monthly coliform monitoring in distribution will continue to be collected by your staff and shipped to an accredited lab of your choice. Refusing sample collection or failing to pay for analyses will result in monitoring violations and revocation of reduced monitoring waivers.

If you have any questions about this letter or report, please contact the Drinking Water Quality Team by email with Subject: "Sample Cost Estimate Letter" at <pdws@tceq.state.tx.us> or at (512) 239-4691.

Sincerely,
Drinking Water Quality Team
Public Drinking Water Section, Water Supply Division

cc: TCEQ Region 4

THIS IS NOT A BILL. DO NOT SEND PAYMENT TO TCEQ.

MONITORING FREQUENCY STATUS

1840027 WILLOW PARK MUNICIPAL SYSTEM

Sample Site: 001 **Location:** HOSE BIBB AT PUMP HOUSE at plant: MULTIPLE PLANTS/BLENDED SOURCES

Test Type	Monitoring Type	Next Sample: Year	Period	Comments	MonChem = G : Dist = G
MIN	INITIAL/ROUTINE	2011	TRIENNIAL		
MTL	REDUCED	2011	6 YEAR		
NO3	INITIAL/ROUTINE	2009	ANNUAL	NO3 <2	
RAD	REDUCED	2009	6 YEAR		
SOC5	REDUCED	2011	6 YEAR		
VOC	REDUCED	2010	6 YEAR		

Sample Site: 008 **Location:** Need sample tap at plant: WILLOW WOOD PS

Test Type	Monitoring Type	Next Sample: Year	Period	Comments	MonChem = G : Dist = G
MIN	INITIAL/ROUTINE	2009	TRIENNIAL		
MTL	REDUCED	2010	6 YEAR		
NO3	INITIAL/ROUTINE	2009	ANNUAL	NO3 <2	
RAD	REDUCED	2009	6 YEAR		
SOC5	INITIAL/ROUTINE	2009	TRIENNIAL		
VOC	INCREASED	2009	ANNUAL	PAST DETECTS	

Sample Site: 009 **Location:** Need sample tap at plant: FOX HUNT PS - 1109 FOX HUNT TR

Test Type	Monitoring Type	Next Sample: Year	Period	Comments	MonChem = G : Dist = G
MIN	INITIAL/ROUTINE	2010	TRIENNIAL		
MTL	INITIAL/ROUTINE	2009	TRIENNIAL		
NO3	INITIAL/ROUTINE	2009	ANNUAL	NO3 <2	
RAD	INITIAL/ROUTINE	2009	TRIENNIAL		
SOC5	INITIAL/ROUTINE	2009	TRIENNIAL		
VOC	REDUCED	2010	6 YEAR		

Sample Site: 010 **Location:** HOSE BIBB AT PUMP HOUSE at plant: WILLOW SPRINGS PS - QUAIL CREST DR

Test Type	Monitoring Type	Next Sample: Year	Period	Comments	MonChem = G : Dist = G
MIN	INITIAL/ROUTINE	2011	TRIENNIAL		
MTL	REDUCED	2011	6 YEAR		
NO3	INITIAL/ROUTINE	2009	ANNUAL	NO3 <2	
RAD	REDUCED	2009	6 YEAR		
SOC5	INITIAL/ROUTINE	2009	TRIENNIAL		
VOC	INCREASED	2009	ANNUAL	PAST DETECTS	

Sample Site: 011 **Location:** HOSE BIBB AT PUMP HOUSE at plant: WILLOW SPRINGS OAKS PS - CIRCLE CT

Test Type	Monitoring Type	Next Sample: Year	Period	Comments	MonChem = G : Dist = G
CYANIDE	INITIAL/ROUTINE	2011	6 YEAR		
MIN	INITIAL/ROUTINE	2011	TRIENNIAL		
MTL	REDUCED	2010	6 YEAR		
NO3	INITIAL/ROUTINE	2009	ANNUAL	NO3 <2	
RAD	INITIAL/ROUTINE	2011	TRIENNIAL		
SOC5	INITIAL/ROUTINE	2009	TRIENNIAL		
VOC	INCREASED	2009	ANNUAL	PAST DETECTS	

Sample Site: Distribution

Test Type	Monitoring Type	Next Sample: Year	Period	Comments
COLIFORM	ROUTINE	2009	MONTHLY	6 SITE(S) REQUIRED BASED ON 5055 POPULATION FROM LAST TCEQ INVESTIGATION
HAA5	REDUCED	2010	TRIENNIAL	138 NORTH CHASE
LEAD/COPPE	ROUTINE	2011	TRIENNIAL	# SITES REQUIRED BASED ON POPULATION
TTHM	REDUCED	2010	TRIENNIAL	138 NORTH CHASE

YEAR 2009 ESTIMATED CHEMICAL SAMPLING COSTS

THIS IS NOT A BILL. DO NOT SEND PAYMENT TO TCEQ.

1840027 **WILLOW PARK MUNICIPAL SYSTEM** *26-Jan-09*

Entry Point: 001			*Sample Tap Location at Plant*	
TCEQ ID	**TEST TYPE**	**PERIOD**	**HOSE BIBB AT PUMP HOUSE at plant: MULTIPLE PLANTS/BLEN**	**COST**
0932391	NO3	ANNUAL		$25.00
0932392	RAD	6 YEAR		$204.00
Entry Point: 008			*Sample Tap Location at Plant*	
TCEQ ID	**TEST TYPE**	**PERIOD**	**Need sample tap location at plant: WILLOW WOOD PS**	**COST**
0932393	MINO3	TRIENNIAL		$155.00
0932394	RAD	6 YEAR		$204.00
0932395	SOC5	TRIENNIAL		$300.00
0932396	VOC	ANNUAL		$183.00
Entry Point: 009			*Sample Tap Location at Plant*	
TCEQ ID	**TEST TYPE**	**PERIOD**	**Need sample tap location at plant: FOX HUNT PS - 1109 F**	**COST**
0932397	ALLMETAL	TRIENNIAL		$264.00
0932398	NO3	ANNUAL		$25.00
0932399	RAD	TRIENNIAL		$204.00
0932400	SOC5	TRIENNIAL		$300.00
Entry Point: 010			*Sample Tap Location at Plant*	
TCEQ ID	**TEST TYPE**	**PERIOD**	**HOSE BIBB AT PUMP HOUSE at plant: WILLOW SPRINGS PS -**	**COST**
0932401	NO3	ANNUAL		$25.00
0932402	RAD	6 YEAR		$204.00
0932403	SOC5	TRIENNIAL		$300.00
0932404	VOC	ANNUAL		$183.00
Entry Point: 011			*Sample Tap Location at Plant*	
TCEQ ID	**TEST TYPE**	**PERIOD**	**HOSE BIBB AT PUMP HOUSE at plant: WILLOW SPRINGS OAKS**	**COST**
0932405	NO3	ANNUAL		$25.00
0932406	SOC5	TRIENNIAL		$300.00
0932407	VOC	ANNUAL		$183.00
Distribution				
TCEQ ID	**TEST TYPE**	**PERIOD**	**DISTRIBUTION LOCATION**	**COST**
—	COLIFORM	MONTHLY	6 MONITORING PLAN SITE(S) TIMES EST. $25 / SAMPLE	$1,800.00

Lab fees and monitoring are subject to change, this is only an estimate. **TOTAL:** **$4,884.00**

THIS IS NOT A BILL. DO NOT SEND PAYMENT TO TCEQ.

REFERENCE 11

Water Quality Summary -

WILLOW PARK MUNICIPAL SYSTEM

PUBLIC DRINKING WATER

PWS ID# 1840027 Region 4 PARKER County

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY TCEQ

SOC5

LAB ID	**TCEQ ID**		**Collected:** 8/14/1995	**Lab:** X	**Data Entry:**	
Chemical		**µg/l**	**POE:** 001	**Well:**		
LAB ID	**TCEQ ID**		**Collected:** 5/27/1997	**Lab:** X	**Data Entry:**	
Chemical		**µg/l**	**POE:** 001	**Well:**		
LAB ID EP013761	**TCEQ ID**		**Collected:** 11/7/2000 KCA	**Lab:** T	**Data Entry:** FGA	12/12/2000
Chemical		**µg/l**	**POE:** 001	**Well:**		
LAB ID EP205608	**TCEQ ID**		**Collected:** 3/19/2002 KCA	**Lab:** T	**Data Entry:** ACL	4/4/2002
Chemical		**µg/l**	**POE:** 001	**Well:**		
LAB ID EP506975	**TCEQ ID** 0532060		**Collected:** 3/15/2005 ABI	**Lab:** T	**Data Entry:** EDR	3/28/2005
Chemical		**µg/l**	**POE:** 001	**Well:**		

Comments: SOC5

LAB ID	**TCEQ ID**		**Collected:** 5/27/1997	**Lab:** X	**Data Entry:**	
Chemical		**µg/l**	**POE:** 002	**Well:**		
LAB ID EP013764	**TCEQ ID**		**Collected:** 11/7/2000 KCA	**Lab:** T	**Data Entry:** FGA	12/12/2000
Chemical		**µg/l**	**POE:** 002	**Well:**		
LAB ID	**TCEQ ID**		**Collected:** 8/14/1995	**Lab:** X	**Data Entry:**	
Chemical		**µg/l**	**POE:** 003	**Well:**		
LAB ID	**TCEQ ID**		**Collected:** 5/27/1997	**Lab:** X	**Data Entry:**	
Chemical		**µg/l**	**POE:** 003	**Well:**		
LAB ID EP013766	**TCEQ ID**		**Collected:** 11/7/2000 KCA	**Lab:** T	**Data Entry:** FGA	12/12/2000
Chemical		**µg/l**	**POE:** 003	**Well:**		
LAB ID EP215035	**TCEQ ID**		**Collected:** 9/18/2002 KCA	**Lab:** T	**Data Entry:** LEP	10/7/2002
Chemical		**µg/l**	**POE:** 003	**Well:**		
LAB ID	**TCEQ ID**		**Collected:** 8/14/1995	**Lab:** X	**Data Entry:**	
Chemical		**µg/l**	**POE:** 004	**Well:**		
LAB ID	**TCEQ ID**		**Collected:** 5/27/1997	**Lab:** X	**Data Entry:**	
Chemical		**µg/l**	**POE:** 004	**Well:**		

LAB ID EP013763	**TCEQ ID**		**Collected:**	11/7/2000 KCA	**Lab:** T	**Data Entry:** FGA	12/12/2000
Chemical		**µg/l**	**POE:** 004	**Well:**			
LAB ID EP209204	**TCEQ ID**		**Collected:**	5/22/2002 KCA	**Lab:** T	**Data Entry:** ACL	6/6/2002
Chemical		**µg/l**	**POE:** 004	**Well:**			
LAB ID	**TCEQ ID**		**Collected:**	8/14/1995	**Lab:** X	**Data Entry:**	
Chemical		**µg/l**	**POE:** 005	**Well:**			
LAB ID	**TCEQ ID**		**Collected:**	5/27/1997	**Lab:** X	**Data Entry:**	
Chemical		**µg/l**	**POE:** 005	**Well:**			
LAB ID	**TCEQ ID**		**Collected:**	8/14/1995	**Lab:** X	**Data Entry:**	
Chemical		**µg/l**	**POE:** 006	**Well:**			
LAB ID	**TCEQ ID**		**Collected:**	5/27/1997	**Lab:** X	**Data Entry:**	
Chemical		**µg/l**	**POE:** 006	**Well:**			
LAB ID EP013765	**TCEQ ID**		**Collected:**	11/7/2000 KCA	**Lab:** T	**Data Entry:** FGA	12/12/2000
Chemical		**µg/l**	**POE:** 006	**Well:**			
LAB ID EP215033	**TCEQ ID**		**Collected:**	9/18/2002 KCA	**Lab:** T	**Data Entry:** LEP	10/7/2002
Chemical		**µg/l**	**POE:** 006	**Well:**			
LAB ID	**TCEQ ID**		**Collected:**	8/14/1995	**Lab:** X	**Data Entry:**	
Chemical		**µg/l**	**POE:** 007	**Well:**			
LAB ID	**TCEQ ID**		**Collected:**	5/27/1997	**Lab:** X	**Data Entry:**	
Chemical		**µg/l**	**POE:** 007	**Well:**			
LAB ID EP013762	**TCEQ ID**		**Collected:**	11/7/2000 KCA	**Lab:** T	**Data Entry:** FGA	12/12/2000
Chemical		**µg/l**	**POE:** 007	**Well:**			
LAB ID EP215034	**TCEQ ID**		**Collected:**	9/18/2002 KCA	**Lab:** T	**Data Entry:** LEP	10/7/2002
Chemical		**µg/l**	**POE:** 007	**Well:**			

VOC

LAB ID	**TCEQ ID**		**Collected:**	9/15/1994	**Lab:** X	**Data Entry:**	
Chemical		**µg/l**	**POE:** 001	**Well:**			
LAB ID	**TCEQ ID**		**Collected:**	8/14/1995	**Lab:** X	**Data Entry:**	
Chemical		**µg/l**	**POE:** 001	**Well:**			
LAB ID 9604735	**TCEQ ID**		**Collected:**	3/25/1996	**Lab:** T	**Data Entry:** MKN	2/24/1999
Chemical		**µg/l**	**POE:** 001	**Well:**			

LAB ID 9705804	TCEQ ID		Collected: 5/27/1997	Lab: T	Data Entry: MKN	2/24/1999
Chemical		µg/l	POE: 001	Well:		

LAB ID 9805955	TCEQ ID		Collected: 3/16/1998	Lab: L	Data Entry: RBE	5/26/1998
Chemical		µg/l	POE: 001	Well:		

LAB ID 9902167	TCEQ ID		Collected: 2/9/1999 KCA	Lab: T	Data Entry: MRO	3/8/1999
Chemical		µg/l	POE: 001	Well:		
BROMODICHLOROMETHANE		2.3				
BROMOFORM		4.7				
CHLOROFORM		0.7				
DIBROMOCHLOROMETHANE		6.1				

LAB ID 9903502	TCEQ ID		Collected: 3/8/1999 KCA	Lab: T	Data Entry: MRO	4/21/1999
Chemical		µg/l	POE: 001	Well:		
BROMODICHLOROMETHANE		1.2				
BROMOFORM		3.2				
DIBROMOCHLOROMETHANE		4.1				

LAB ID EP013720	TCEQ ID		Collected: 11/7/2000 KCA	Lab: T	Data Entry: FGA	12/7/2000
Chemical		µg/l	POE: 001	Well:		
BROMODICHLOROMETHANE		1.4				
BROMOFORM		6.9				
DIBROMOCHLOROMETHANE		4.9				

LAB ID EP205533	TCEQ ID		Collected: 3/19/2002 KCA	Lab: T	Data Entry: ACL	4/15/2002
Chemical		µg/l	POE: 001	Well:		
BROMODICHLOROMETHANE		1.7				
BROMOFORM		3.3				
DIBROMOCHLOROMETHANE		3.4				

LAB ID	TCEQ ID		Collected: 9/15/1994	Lab: X	Data Entry:	
Chemical		µg/l	POE: 002	Well:		

LAB ID	TCEQ ID		Collected: 12/13/1994	Lab: X	Data Entry:	
Chemical		µg/l	POE: 002	Well:		

LAB ID	TCEQ ID		Collected: 8/14/1995	Lab: X	Data Entry:	
Chemical		µg/l	POE: 002	Well:		

LAB ID 9604736	TCEQ ID		Collected: 3/25/1996	Lab: T	Data Entry: MKN	2/24/1999
Chemical		µg/l	POE: 002	Well:		

LAB ID 9705805	TCEQ ID		Collected: 5/27/1997	Lab: T	Data Entry: MKN	2/24/1999
Chemical		µg/l	POE: 002	Well:		

LAB ID 9900566	TCEQ ID		Collected: 7/23/1998	Lab: L	Data Entry: MKN	9/19/1999
Chemical		µg/l	POE: 002	Well:		
			S-LE;LCRA-L			

LAB ID 9903503	TCEQ ID		Collected: 3/8/1999 KCA	Lab: T	Data Entry: MRO	4/7/1999
Chemical		µg/l	POE: 002	Well:		
BROMODICHLOROMETHANE		1.2				
BROMOFORM		3.2				
DIBROMOCHLOROMETHANE		3.5				

LAB ID EP013715	**TCEQ ID**		**Collected:**	11/7/2000 KCA	**Lab:** T	**Data Entry:** FGA	12/7/2000
Chemical		**µg/l**	**POE:** 002	**Well:**			
BROMODICHLOROMETHANE		3.7					
BROMOFORM		20					
CHLOROFORM		1.0					
DIBROMOCHLOROMETHANE		11					
LAB ID	**TCEQ ID**		**Collected:**	9/15/1994	**Lab:** X	**Data Entry:**	
Chemical		**µg/l**	**POE:** 003	**Well:**			
LAB ID	**TCEQ ID**		**Collected:**	8/14/1995	**Lab:** X	**Data Entry:**	
Chemical		**µg/l**	**POE:** 003	**Well:**			
LAB ID 9604737	**TCEQ ID**		**Collected:**	3/25/1996	**Lab:** T	**Data Entry:** MKN	2/24/1999
Chemical		**µg/l**	**POE:** 003	**Well:**			
LAB ID 9705806	**TCEQ ID**		**Collected:**	5/27/1997	**Lab:** T	**Data Entry:** MKN	2/24/1999
Chemical		**µg/l**	**POE:** 003	**Well:**			
LAB ID 9900567	**TCEQ ID**		**Collected:**	7/23/1998	**Lab:** L	**Data Entry:** MKN	9/19/1999
Chemical		**µg/l**	**POE:** 003	**Well:**			
			S-LE;LCRA-L				
LAB ID EP013718	**TCEQ ID**		**Collected:**	11/7/2000 KCA	**Lab:** T	**Data Entry:** FGA	12/6/2000
Chemical		**µg/l**	**POE:** 003	**Well:**			
LAB ID EP215012	**TCEQ ID**		**Collected:**	9/18/2002 KCA	**Lab:** T	**Data Entry:** LEP	10/7/2002
Chemical		**µg/l**	**POE:** 003	**Well:**			
LAB ID	**TCEQ ID**		**Collected:**	9/15/1994	**Lab:** X	**Data Entry:**	
Chemical		**µg/l**	**POE:** 004	**Well:**			
LAB ID	**TCEQ ID**		**Collected:**	12/13/1994	**Lab:** X	**Data Entry:**	
Chemical		**µg/l**	**POE:** 004	**Well:**			
LAB ID	**TCEQ ID**		**Collected:**	8/14/1995	**Lab:** X	**Data Entry:**	
Chemical		**µg/l**	**POE:** 004	**Well:**			
LAB ID 9604738	**TCEQ ID**		**Collected:**	3/25/1996	**Lab:** T	**Data Entry:** MKN	2/24/1999
Chemical		**µg/l**	**POE:** 004	**Well:**			
2-BUTANONE (MEK)		74					
TETRAHYDROFURAN		41					
LAB ID	**TCEQ ID**		**Collected:**	9/24/1996	**Lab:** X	**Data Entry:**	
Chemical		**µg/l**	**POE:** 004	**Well:**			
LAB ID	**TCEQ ID**		**Collected:**	12/9/1996	**Lab:** X	**Data Entry:**	
Chemical		**µg/l**	**POE:** 004	**Well:**			
LAB ID 9705804	**TCEQ ID**		**Collected:**	5/27/1997	**Lab:** T	**Data Entry:** MKN	2/24/1999
Chemical		**µg/l**	**POE:** 004	**Well:**			

LAB ID 9709216	**TCEQ ID**		**Collected:**	8/12/1997		**Lab:** T	**Data Entry:** MKN	2/24/1999
Chemical		**µg/l**	**POE:** 004	**Well:**				
LAB ID 9900568	**TCEQ ID**		**Collected:**	7/23/1998		**Lab:** L	**Data Entry:** MKN	9/19/1999
Chemical		**µg/l**	**POE:** 004	**Well:**				
			S-LE;LCRA-L					
LAB ID EP013719	**TCEQ ID**		**Collected:**	11/7/2000	KCA	**Lab:** T	**Data Entry:** FGA	12/7/2000
Chemical		**µg/l**	**POE:** 004	**Well:**				
CHLOROFORM		1.1						
LAB ID EP209141	**TCEQ ID**		**Collected:**	5/22/2002	KCA	**Lab:** T	**Data Entry:** ACL	6/11/2002
Chemical		**µg/l**	**POE:** 004	**Well:**				
CHLOROFORM		0.6						
LAB ID	**TCEQ ID**		**Collected:**	9/15/1994		**Lab:** X	**Data Entry:**	
Chemical		**µg/l**	**POE:** 005	**Well:**				
LAB ID	**TCEQ ID**		**Collected:**	12/13/1994		**Lab:** X	**Data Entry:**	
Chemical		**µg/l**	**POE:** 005	**Well:**				
LAB ID	**TCEQ ID**		**Collected:**	8/14/1995		**Lab:** X	**Data Entry:**	
Chemical		**µg/l**	**POE:** 005	**Well:**				
LAB ID 9604739	**TCEQ ID**		**Collected:**	3/25/1996		**Lab:** T	**Data Entry:** MKN	2/24/1999
Chemical		**µg/l**	**POE:** 005	**Well:**				
LAB ID 9705808	**TCEQ ID**		**Collected:**	5/27/1997		**Lab:** T	**Data Entry:** MKN	2/24/1999
Chemical		**µg/l**	**POE:** 005	**Well:**				
LAB ID 9814740	**TCEQ ID**		**Collected:**	10/8/1998	KCA	**Lab:** T	**Data Entry:** MRO	11/19/1998
Chemical		**µg/l**	**POE:** 005	**Well:**				
LAB ID	**TCEQ ID**		**Collected:**	9/15/1994		**Lab:** X	**Data Entry:**	
Chemical		**µg/l**	**POE:** 006	**Well:**				
LAB ID	**TCEQ ID**		**Collected:**	12/13/1994		**Lab:** X	**Data Entry:**	
Chemical		**µg/l**	**POE:** 006	**Well:**				
LAB ID	**TCEQ ID**		**Collected:**	8/14/1995		**Lab:** X	**Data Entry:**	
Chemical		**µg/l**	**POE:** 006	**Well:**				
LAB ID 9604740	**TCEQ ID**		**Collected:**	3/25/1996		**Lab:** T	**Data Entry:** MKN	2/24/1999
Chemical		**µg/l**	**POE:** 006	**Well:**				
LAB ID 9705809	**TCEQ ID**		**Collected:**	5/27/1997		**Lab:** T	**Data Entry:** MKN	2/24/1999
Chemical		**µg/l**	**POE:** 006	**Well:**				
LAB ID 9900569	**TCEQ ID**		**Collected:**	7/23/1998		**Lab:** L	**Data Entry:** MKN	9/19/1999
Chemical		**µg/l**	**POE:** 006	**Well:**				
			S-LE;LCRA-L					

LAB ID 9909847	**TCEQ ID**		**Collected:**	8/23/1999 KCA	**Lab:** T	**Data Entry:** FGA	10/4/1999
Chemical		**µg/l**	**POE:** 006	**Well:**			
LAB ID EP013717	**TCEQ ID**		**Collected:**	11/7/2000 KCA	**Lab:** T	**Data Entry:** FGA	12/7/2000
Chemical		**µg/l**	**POE:** 006	**Well:**			
CHLOROFORM		0.5					
LAB ID EP215013	**TCEQ ID**		**Collected:**	9/18/2002 KCA	**Lab:** T	**Data Entry:** LEP	10/7/2002
Chemical		**µg/l**	**POE:** 006	**Well:**			
LAB ID	**TCEQ ID**		**Collected:**	9/15/1994	**Lab:** X	**Data Entry:**	
Chemical		**µg/l**	**POE:** 007	**Well:**			
LAB ID	**TCEQ ID**		**Collected:**	8/14/1995	**Lab:** X	**Data Entry:**	
Chemical		**µg/l**	**POE:** 007	**Well:**			
LAB ID 9604741	**TCEQ ID**		**Collected:**	3/25/1996	**Lab:** T	**Data Entry:** MKN	2/24/1999
Chemical		**µg/l**	**POE:** 007	**Well:**			
LAB ID 9705810	**TCEQ ID**		**Collected:**	5/27/1997	**Lab:** T	**Data Entry:** MKN	2/24/1999
Chemical		**µg/l**	**POE:** 007	**Well:**			
LAB ID 9900570	**TCEQ ID**		**Collected:**	7/23/1998	**Lab:** L	**Data Entry:** MKN	9/19/1999
Chemical		**µg/l**	**POE:** 007	**Well:**			
			S-LE;LCRA-L				
LAB ID 9902171	**TCEQ ID**		**Collected:**	2/9/1999 KCA	**Lab:** T	**Data Entry:** MRO	3/23/1999
Chemical		**µg/l**	**POE:** 007	**Well:**			
LAB ID EP013714	**TCEQ ID**		**Collected:**	11/7/2000 KCA	**Lab:** T	**Data Entry:** FGA	12/6/2000
Chemical		**µg/l**	**POE:** 007	**Well:**			
LAB ID EP215014	**TCEQ ID**		**Collected:**	9/18/2002 KCA	**Lab:** T	**Data Entry:** LEP	10/7/2002
Chemical		**µg/l**	**POE:** 007	**Well:**			
LAB ID	**TCEQ ID**		**Collected:**	9/15/1994	**Lab:** X	**Data Entry:**	
Chemical		**µg/l**	**POE:** 008	**Well:**			
LAB ID	**TCEQ ID**		**Collected:**	12/13/1994	**Lab:** X	**Data Entry:**	
Chemical		**µg/l**	**POE:** 008	**Well:**			
LAB ID	**TCEQ ID**		**Collected:**	8/14/1995	**Lab:** X	**Data Entry:**	
Chemical		**µg/l**	**POE:** 008	**Well:**			
LAB ID 9608301	**TCEQ ID**		**Collected:**	5/30/1996	**Lab:** T	**Data Entry:** MKN	2/24/1999
Chemical		**µg/l**	**POE:** 008	**Well:**			
DICHLOROMETHANE		2.7					
LAB ID	**TCEQ ID**		**Collected:**	12/9/1996	**Lab:** X	**Data Entry:**	
Chemical		**µg/l**	**POE:** 008	**Well:**			

LAB ID 9705811	**TCEQ ID**		**Collected:**	5/27/1997		**Lab:** T	**Data Entry:** MKN	2/24/1999
Chemical		**µg/l**	**POE:** 008	**Well:**				

LAB ID 9709215	**TCEQ ID**		**Collected:**	8/12/1997		**Lab:** T	**Data Entry:** MKN	2/24/1999
Chemical		**µg/l**	**POE:** 008	**Well:**				

LAB ID 9900571	**TCEQ ID**		**Collected:**	7/23/1998		**Lab:** L	**Data Entry:** MKN	9/19/1999
Chemical		**µg/l**	**POE:** 008	**Well:**				
			S-LE;LCRA-L					

LAB ID EP013716	**TCEQ ID**		**Collected:**	11/7/2000	KCA	**Lab:** T	**Data Entry:** FGA	12/6/2000
Chemical		**µg/l**	**POE:** 008	**Well:**				

LAB ID EP205576	**TCEQ ID**		**Collected:**	3/19/2002	KCA	**Lab:** T	**Data Entry:** ACL	4/15/2002
Chemical		**µg/l**	**POE:** 008	**Well:**				
BROMODICHLOROMETHANE		3.2						
BROMOFORM		0.6						
CHLOROFORM		3.6						
DIBROMOCHLOROMETHANE		2.2						

LAB ID EP425198	**TCEQ ID** 0333554		**Collected:**	11/11/2004	ABI	**Lab:** T	**Data Entry:**	12/2/2004
Chemical		**µg/l**	**POE:** 009	**Well:**				
DIBROMOCHLOROMETHANE		0.6						
			Comments: VOC					

LAB ID EP116321	**TCEQ ID**		**Collected:**	10/29/2001	MAP	**Lab:** T	**Data Entry:** FGA	11/28/2001
Chemical		**µg/l**	**POE:** 010	**Well:**				
CHLOROFORM		0.5						
TRICHLOROETHENE		2.4						

LAB ID EP205575	**TCEQ ID**		**Collected:**	3/19/2002	KCA	**Lab:** T	**Data Entry:** ACL	4/15/2002
Chemical		**µg/l**	**POE:** 010	**Well:**				

LAB ID EP209144	**TCEQ ID**		**Collected:**	5/22/2002	KCA	**Lab:** T	**Data Entry:** ACL	6/11/2002
Chemical		**µg/l**	**POE:** 010	**Well:**				
2-BUTANONE (MEK)		37						
BROMODICHLOROMETHANE		9.7						
BROMOFORM		0.9						
CARBON TETRACHLORIDE		1.0						
CHLOROFORM		19						
DIBROMOCHLOROMETHANE		5.0						
TETRAHYDROFURAN		12						

LAB ID EP215015	**TCEQ ID**		**Collected:**	9/18/2002	KCA	**Lab:** T	**Data Entry:** LEP	10/4/2002
Chemical		**µg/l**	**POE:** 010	**Well:**				
2-FURANCARBOXALDEHYDE		1.1	R-SA					
BROMODICHLOROMETHANE		10						
BROMOFORM		.7						
CHLOROFORM		18						
DIBROMOCHLOROMETHANE		5.4						

LAB ID EP218252	**TCEQ ID**		**Collected:**	11/19/2002	KCA	**Lab:** T	**Data Entry:** LEP	12/11/2002
Chemical		**µg/l**	**POE:** 010	**Well:**				
BROMODICHLOROMETHANE		1.4						
CHLOROFORM		1						
DIBROMOCHLOROMETHANE		1.2						

LAB ID EP304973	TCEQ ID		Collected: 3/25/2003 KCA	Lab: T	Data Entry: ACL	4/24/2003
Chemical		**µg/l**	**POE:** 010	**Well:**		
BROMODICHLOROMETHANE		1.1				
CHLOROFORM		0.9				
DIBROMOCHLOROMETHANE		0.8				
LAB ID EP506949	**TCEQ ID** 0532086		**Collected:** 3/15/2005 ABI	**Lab:** T	**Data Entry:** EDR	3/28/2005
Chemical		**µg/l**	**POE:** 010	**Well:**		
CHLOROFORM		1.1				
DIBROMOCHLOROMETHANE		1.2				
DICHLOROBROMOMETHANE		1.4				
			Comments: VOC			
LAB ID 0603549007	**TCEQ ID** 0617438		**Collected:** 3/23/2006 ABI	**Lab:** L	**Data Entry:** EDR	4/24/2006
Chemical		**µg/l**	**POE:** 010	**Well:**		
Bromodichloromethane		1.38				
Dibromochloromethane		1.48				
LAB ID AA08362	**TCEQ ID** 0733493		**Collected:** 2/22/2007 ABI	**Lab:** T	**Data Entry:** EDR	3/13/2007
Chemical		**µg/l**	**POE:** 010	**Well:**		
LAB ID AA08363	**TCEQ ID** 0733493		**Collected:** 2/22/2007 ABI	**Lab:** T	**Data Entry:** EDR	3/7/2007
Chemical		**µg/l**	**POE:** 010	**Well:**		
Bromodichloromethane		0.8				
Chloroform		0.6				
Dibromochloromethane		0.9				
LAB ID EP116320	**TCEQ ID**		**Collected:** 10/29/2001 MAP	**Lab:** T	**Data Entry:** ACL	1/31/2002
Chemical		**µg/l**	**POE:** 011	**Well:**		
CHLOROFORM		0.8				
LAB ID EP205531	**TCEQ ID**		**Collected:** 3/19/2002 KCA	**Lab:** T	**Data Entry:** ACL	4/17/2002
Chemical		**µg/l**	**POE:** 011	**Well:**		
CHLOROFORM		0.7				
DIBROMOCHLOROMETHANE		0.6				
TRICHLOROETHENE		1.9				
LAB ID EP215016	**TCEQ ID**		**Collected:** 9/18/2002 KCA	**Lab:** T	**Data Entry:** GRE	10/4/2002
Chemical		**µg/l**	**POE:** 011	**Well:**		
BROMODICHLOROMETHANE		1.3				
CHLOROFORM		2.6				
DIBROMOCHLOROMETHANE		0.6				
TRICHLOROETHENE		1.8				
LAB ID EP218253	**TCEQ ID**		**Collected:** 11/19/2002 KCA	**Lab:** T	**Data Entry:** GRE	12/4/2002
Chemical		**µg/l**	**POE:** 011	**Well:**		
BROMODICHLOROMETHANE		1.8				
CHLOROFORM		2.1				
DIBROMOCHLOROMETHANE		1.2				
TRICHLOROETHENE		1.9				
LAB ID EP304974	**TCEQ ID**		**Collected:** 3/25/2003 KCA	**Lab:** T	**Data Entry:** ACL	4/24/2003
Chemical		**µg/l**	**POE:** 011	**Well:**		
BROMODICHLOROMETHANE		1.7				
CHLOROFORM		1.3				
DIBROMOCHLOROMETHANE		1.3				
TRICHLOROETHENE		1.3				

LAB ID EP425196	TCEQ ID 0333561	Collected: 11/11/2004 ABI	Lab: T	Data Entry:	12/2/2004
Chemical	**µg/l**	**POE:** 011	**Well:**		
BROMOFORM	1.5				
CHLOROFORM	1.1				
DIBROMOCHLOROMETHANE	3.1				
DICHLOROBROMOMETHANE	2.1				
TRICHLOROETHENE	3.4				

Comments: VOC

LAB ID EP506947	TCEQ ID 0532092	Collected: 3/15/2005 ABI	Lab: T	Data Entry: EDR	3/28/2005
Chemical	**µg/l**	**POE:** 011	**Well:**		
BROMOFORM	1.2				
CHLOROFORM	0.8				
DIBROMOCHLOROMETHANE	2.4				
DICHLOROBROMOMETHANE	1.6				
TRICHLOROETHENE	2.8				

Comments: VOC

LAB ID 0603549009	TCEQ ID 0617439	Collected: 3/23/2006 ABI	Lab: L	Data Entry: EDR	4/24/2006
Chemical	**µg/l**	**POE:** 011	**Well:**		
Bromodichloromethane	2.95				
Bromoform	2.36				
Chloroform	1.68				
Dibromochloromethane	4.46				
Trichloroethene	6.03				

LAB ID 0603549010	TCEQ ID 0617439	Collected: 3/23/2006 ABI	Lab: L	Data Entry: EDR	4/24/2006
Chemical	**µg/l**	**POE:** 011	**Well:**		

LAB ID 0605107002	TCEQ ID 0692514	Collected: 5/4/2006 ABI	Lab: L	Data Entry: EDR	5/15/2006
Chemical	**µg/l**	**POE:** 011	**Well:**		
Acetone	7.84 FB				

LAB ID AA08364	TCEQ ID 0733495	Collected: 2/22/2007 ABI	Lab: T	Data Entry: EDR	3/13/2007
Chemical	**µg/l**	**POE:** 011	**Well:**		

LAB ID AA08365	TCEQ ID 0733495	Collected: 2/22/2007 ABI	Lab: T	Data Entry: EDR	3/7/2007
Chemical	**µg/l**	**POE:** 011	**Well:**		
Bromodichloromethane	0.6				
Chloroform	0.5				
Dibromochloromethane	0.9				

LAB ID AA76643	TCEQ ID 0835930FB	Collected: 9/17/2008 DW	Lab: T	Data Entry: EDR	10/3/2008
Chemical	**µg/l**	**POE:** 011	**Well:**		

LAB ID AA76644	TCEQ ID 0835930	Collected: 9/17/2008 DW	Lab: T	Data Entry: EDR	9/29/2008
Chemical	**µg/l**	**POE:** 011	**Well:**		
Isopropyl alcohol	3.9				

LAB ID 0603549011	TCEQ ID 0615987	Collected: 3/23/2006 ABI	Lab: L	Data Entry: EDR	4/24/2006
Chemical	**µg/l**	**POE:** 013	**Well:**		
Bromodichloromethane	2.66				
Bromoform	1.85				
Dibromochloromethane	3.88				

LAB ID EP109500	TCEQ ID	Collected: 6/11/2001 KCA	Lab: T	Data Entry: FGA	6/29/2001
Chemical	**µg/l**	**POE:** 014	**Well:**		
UNIDENTIFIED	1.7				

LAB ID EP109501	**TCEQ ID**		**Collected:**	6/11/2001 KCA	**Lab:** T	**Data Entry:** FGA	6/29/2001
Chemical		**µg/l**	**POE:** 015	**Well:**			
UNIDENTIFIED		1.4					
LAB ID EP304972	**TCEQ ID**		**Collected:**	3/25/2003 KCA	**Lab:** T	**Data Entry:** GRE	4/23/2003
Chemical		**µg/l**	**POE:** R	**Well:**	G1840027U	@EP011	
TRICHLOROETHENE		2.0					
LAB ID 0605107001	**TCEQ ID** 0692514		**Collected:**	5/4/2006 ABI	**Lab:** L	**Data Entry:** EDR	5/15/2006
Chemical		**µg/l**	**POE:** R	**Well:** G1840027U			
Trichloroethene		33.9					

REFERENCE 12

Willow Springs Oaks TCE Removal

		Initial Level	MCL
Problem	Trichoroethane (TCE)	6.9 ug/L	5 ug/L

Date of Discovery: 3/23/2006

Response: Removed well from Service and investigated in-line Filters

Flow (GPM): 39 56160 GPD

Max	33.9	<	2.0
Min	2.2	<	2.0
Average	7.5	<	2.0

Date	Raw TCE ug/L		Post Filter TCE ug/L	Comment
March 23, 2006	6.9			Well sampled by TCEQ
April 1, 2006				Well taken out of service
April 24, 2006				Pre approval requested from regional office (email)
April 25, 2006				Pre approval received from regional office (email)
May 4, 2006	33.9			Well sampled a 2nd time after sitting for 6 weeks
June 1, 2006				Eagle Construction sampled area wells for possible contamination
June 19, 2006				Installed filters
June 20, 2006	6.8	<	2.0	First samples using filters
June 26, 2006	6.1	<	2.0	Monthly Sample
July 6, 2006	5.2	<	2.0	Monthly Sample
July 27, 2006		<	2.0	Filter backwashed and sample of backwash water < 2.0
July 31, 2006				Mailed TCEQ in Austin engineering letter for approval on the carbon filtration system
August 11, 2006	2.2	<	2.0	Monthly Sample
September 11, 2006	3.9	<	2.0	Monthly Sample
October 5, 2006	5.4	<	2.0	Monthly Sample
November 16, 2006	5.7	<	2.0	Monthly Sample
December 20, 2006	5.4	<	2.0	Monthly Sample
January 26, 2007	4.7	<	2.0	Monthly Sample
February 6, 2007	3.5	<	2.0	Monthly Sample
March 6, 2007				Tec region 4 Xiao Hong Wang and Dan Long coming out for a system review
				Monthly Sample

REFERENCE 13

Pete Wehner - Fwd: Priority 48 hr VOC Results

From: Gary Regner
To: Pete Wehner; Sean Ables; Tom Weber
Date: 5/9/2006 8:28 AM
Subject: Fwd: Priority 48 hr VOC Results

Here are the follow up results for Willow Park MS. The sample was directly from the well.

Thank you

Gary Regner
Quality Assurance Specialist
Sample Contract Manager
Drinking Water Quality Team
Public Drinking Water Section
TCEQ
Phone: (512) 239-4528
Fax: (512) 239-6050

>>> "Susan Benavidez" <Susan.Benavidez@lcra.org> 5/8/2006 1:44 PM >>>
** Confidential **

PWS: 1840027
Analysis: VOC
TCEQ ID: 0692514
Sampled: 5/4/06 10:00
Received: 5/5/06 07:00

Please note that the VOC's have an exceedence for Trichloroethene (TCE) and this paperwork will follow later today.

Please see attached the Final Results and Submission Forms below.

Please feel free to call if you require any further assistance.
Have a safe and blessed day.

Susan Benavidez
Project Manager
LCRA-ELS
(512) 356-6013
susan.benavidez@lcra.org

Final Analysis Report

LCRA Environmental Laboratory Services

Date: *08-May-06*

CLIENT: WILLOW PARK MUNICIPAL SYSTEM
Client Sample ID: 011
Lab ID: 0605107-001
Project: WS 1840027
Collection Date: 5/4/2006 10:00:00 AM
Matrix: DRINKING WATER
TCEQ Sample ID: 0692514

Analyses	Result	Qual	MCL	PQL	Units	DF	BatchID	Date Analyzed
VOLATILES BY GCMS			E524.2					Analyst: KRD
Regulated Compounds [40 CFR §141.61(a) - 7/1/1999]								
Benzene	ND		5	0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
Carbon Tetrachloride	ND		5	0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
Chlorobenzene	ND		100	0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
1,2-Dichlorobenzene	ND		600	0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
1,4-Dichlorobenzene	ND		75	0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
1,2-Dichloroethane	ND		5	0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
1,1-Dichloroethene	ND		7	0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
cis-1,2-Dichloroethene	ND		70	0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
trans-1,2-Dichloroethene	ND		100	0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
1,2-Dichloropropane	ND		5	0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
Ethylbenzene	ND		700	0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
Methylene chloride (DCM)	ND		5	0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
Styrene	ND		100	0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
Tetrachloroethene	ND		5	0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
Toluene	ND		1000	0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
1,2,4-Trichlorobenzene	ND		70	0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
1,1,1-Trichloroethane	ND		200	0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
1,1,2-Trichloroethane	ND		5	0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
Trichloroethene	33.91	X	5	0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
Vinyl chloride	ND		2	1.00	µg/L	1	40937	5/5/2006 11:59:00 AM
m,p-Xylene	ND			1.00	µg/L	1	40937	5/5/2006 11:59:00 AM
o-Xylene	ND			0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
Xylenes, Total	ND		10000	2.00	µg/L	1	40937	5/5/2006 11:59:00 AM
Monitored Compounds [40 CFR §141.40(e) -7/1/1999]								
Chloroform	ND			1.00	µg/L	1	40937	5/5/2006 11:59:00 AM
Bromodichloromethane	ND			1.00	µg/L	1	40937	5/5/2006 11:59:00 AM
Dibromochloromethane	ND			1.00	µg/L	1	40937	5/5/2006 11:59:00 AM
Bromoform	ND			1.00	µg/L	1	40937	5/5/2006 11:59:00 AM
Dibromomethane	ND			0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
1,3-Dichlorobenzene	ND			0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
1,1-Dichloropropene	ND			0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
1,1-Dichloroethane	ND			0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
1,1,2,2-Tetrachloroethane	ND			0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
1,3-Dichloropropane	ND			0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
Chloromethane	ND			0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
Bromomethane	ND			1.00	µg/L	1	40937	5/5/2006 11:59:00 AM
1,2,3-Trichloropropane	ND			1.00	µg/L	1	40937	5/5/2006 11:59:00 AM
1,1,1,2-Tetrachloroethane	ND			0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
Chloroethane	ND			1.00	µg/L	1	40937	5/5/2006 11:59:00 AM

Qualifiers:

- * Value exceeds Maximum Contaminant Level
- E Value above quantitation range
- ND Not Detected at the Reporting Limit
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- S Spike Recovery outside accepted recovery limits

LCRA Environmental Laboratory Services

Date: *08-May-06*

CLIENT:	WILLOW PARK MUNICIPAL SYSTEM	**Client Sample ID:**	011
Lab ID:	0605107-001		
Project:	WS 1840027	**Collection Date:**	5/4/2006 10:00:00 AM
Matrix:	DRINKING WATER	**TCEQ Sample ID:**	0692514

Analyses	Result	Qual	MCL	PQL	Units	DF	BatchID	Date Analyzed
Monitored Compounds [40 CFR §141.40(e) -7/1/1999]								
2,2-Dichloropropane	ND			0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
2-Chlorotoluene	ND			0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
4-Chlorotoluene	ND			0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
Bromobenzene	ND			0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
cis-1,3-Dichloropropene	ND			0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
trans-1,3-Dichloropropene	ND			0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
Screened Compounds								
1,2-Dibromo-3-chloropropane	ND		0.2	1.00	µg/L	1	40937	5/5/2006 11:59:00 AM
1,2-Dibromoethane	ND		0.05	1.00	µg/L	1	40937	5/5/2006 11:59:00 AM
Monitored Compounds [40 CFR §141.40(j) -7/1/1999]								
1,2,4-Trimethylbenzene	ND			0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
1,2,3-Trichlorobenzene	ND			0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
n-Propylbenzene	ND			0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
Butyl benzene	ND			0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
Naphthalene	ND			0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
Hexachlorobutadiene	ND			0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
1,3,5-Trimethylbenzene	ND			0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
4-Isopropyltoluene	ND			0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
Isopropylbenzene	ND			0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
tert-Butylbenzene	ND			0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
sec-Butylbenzene	ND			0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
Trichlorofluoromethane	ND			0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
Dichlorodifluoromethane	ND			1.00	µg/L	1	40937	5/5/2006 11:59:00 AM
Bromochloromethane	ND			0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
Other Compounds								
Acetone	ND			5.00	µg/L	1	40937	5/5/2006 11:59:00 AM
Acrylonitrile	ND			5.00	µg/L	1	40937	5/5/2006 11:59:00 AM
2-Butanone (MEK)	ND			5.00	µg/L	1	40937	5/5/2006 11:59:00 AM
Carbon Disulfide	ND			0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
Ethyl methacrylate	ND			5.00	µg/L	1	40937	5/5/2006 11:59:00 AM
2-Hexanone	ND			5.00	µg/L	1	40937	5/5/2006 11:59:00 AM
Iodomethane	ND			0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
Methyl methacrylate	ND			5.00	µg/L	1	40937	5/5/2006 11:59:00 AM
4-Methyl-2-pentanone (MIBK)	ND			5.00	µg/L	1	40937	5/5/2006 11:59:00 AM
Methyl tert-butyl ether (MTBE)	ND			0.50	µg/L	1	40937	5/5/2006 11:59:00 AM
Tetrahydrofuran	ND			5.00	µg/L	1	40937	5/5/2006 11:59:00 AM
Vinyl Acetate	ND			5.00	µg/L	1	40937	5/5/2006 11:59:00 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	S	Spike Recovery outside accepted recovery limits

LCRA Environmental Laboratory Services

Date: *08-May-06*

CLIENT:	WILLOW PARK MUNICIPAL SYSTEM	**Client Sample ID:**	011
Lab ID:	0605107-002		Field Blank
Project:	WS 1840027	**Collection Date:**	5/4/2006 10:00:00 AM
Matrix:	DRINKING WATER	**TCEQ Sample ID:**	0692514

Analyses	Result	Qual	MCL	PQL	Units	DF	BatchID	Date Analyzed
VOLATILES BY GCMS				**E524.2**				Analyst: **KRD**
Regulated Compounds [40 CFR §141.61(a) - 7/1/1999]								
Benzene	ND		5	0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
Carbon Tetrachloride	ND		5	0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
Chlorobenzene	ND		100	0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
1,2-Dichlorobenzene	ND		600	0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
1,4-Dichlorobenzene	ND		75	0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
1,2-Dichloroethane	ND		5	0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
1,1-Dichloroethene	ND		7	0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
cis-1,2-Dichloroethene	ND		70	0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
trans-1,2-Dichloroethene	ND		100	0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
1,2-Dichloropropane	ND		5	0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
Ethylbenzene	ND		700	0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
Methylene chloride (DCM)	ND		5	0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
Styrene	ND		100	0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
Tetrachloroethene	ND		5	0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
Toluene	ND		1000	0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
1,2,4-Trichlorobenzene	ND		70	0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
1,1,1-Trichloroethane	ND		200	0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
1,1,2-Trichloroethane	ND		5	0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
Trichloroethene	ND		5	0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
Vinyl chloride	ND		2	1.00	µg/L	1	40937	5/5/2006 11:27:00 AM
m,p-Xylene	ND			1.00	µg/L	1	40937	5/5/2006 11:27:00 AM
o-Xylene	ND			0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
Xylenes, Total	ND		10000	2.00	µg/L	1	40937	5/5/2006 11:27:00 AM
Monitored Compounds [40 CFR §141.40(e) -7/1/1999]								
Chloroform	ND			1.00	µg/L	1	40937	5/5/2006 11:27:00 AM
Bromodichloromethane	ND			1.00	µg/L	1	40937	5/5/2006 11:27:00 AM
Dibromochloromethane	ND			1.00	µg/L	1	40937	5/5/2006 11:27:00 AM
Bromoform	ND			1.00	µg/L	1	40937	5/5/2006 11:27:00 AM
Dibromomethane	ND			0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
1,3-Dichlorobenzene	ND			0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
1,1-Dichloropropene	ND			0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
1,1-Dichloroethane	ND			0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
1,1,2,2-Tetrachloroethane	ND			0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
1,3-Dichloropropane	ND			0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
Chloromethane	ND			0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
Bromomethane	ND			1.00	µg/L	1	40937	5/5/2006 11:27:00 AM
1,2,3-Trichloropropane	ND			1.00	µg/L	1	40937	5/5/2006 11:27:00 AM
1,1,1,2-Tetrachloroethane	ND			0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
Chloroethane	ND			1.00	µg/L	1	40937	5/5/2006 11:27:00 AM
2,2-Dichloropropane	ND			0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
2-Chlorotoluene	ND			0.50	µg/L	1	40937	5/5/2006 11:27:00 AM

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit	S	Spike Recovery outside accepted recovery limits

LCRA Environmental Laboratory Services

Date: *08-May-06*

CLIENT:	WILLOW PARK MUNICIPAL SYSTEM	**Client Sample ID:**	011
Lab ID:	0605107-002		Field Blank
Project:	WS 1840027	**Collection Date:**	5/4/2006 10:00:00 AM
Matrix:	DRINKING WATER	**TCEQ Sample ID:**	0692514

Analyses	Result	Qual	MCL	PQL	Units	DF	BatchID	Date Analyzed
Monitored Compounds [40 CFR §141.40(e) -7/1/1999]								
4-Chlorotoluene	ND			0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
Bromobenzene	ND			0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
cis-1,3-Dichloropropene	ND			0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
trans-1,3-Dichloropropene	ND			0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
Screened Compounds								
1,2-Dibromo-3-chloropropane	ND		0.2	1.00	µg/L	1	40937	5/5/2006 11:27:00 AM
1,2-Dibromoethane	ND		0.05	1.00	µg/L	1	40937	5/5/2006 11:27:00 AM
Monitored Compounds [40 CFR §141.40(j) -7/1/1999]								
1,2,4-Trimethylbenzene	ND			0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
1,2,3-Trichlorobenzene	ND			0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
n-Propylbenzene	ND			0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
Butyl benzene	ND			0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
Naphthalene	ND			0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
Hexachlorobutadiene	ND			0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
1,3,5-Trimethylbenzene	ND			0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
4-Isopropyltoluene	ND			0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
Isopropylbenzene	ND			0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
tert-Butylbenzene	ND			0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
sec-Butylbenzene	ND			0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
Trichlorofluoromethane	ND			0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
Dichlorodifluoromethane	ND			1.00	µg/L	1	40937	5/5/2006 11:27:00 AM
Bromochloromethane	ND			0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
Other Compounds								
Acetone	7.84			5.00	µg/L	1	40937	5/5/2006 11:27:00 AM
Acrylonitrile	ND			5.00	µg/L	1	40937	5/5/2006 11:27:00 AM
2-Butanone (MEK)	ND			5.00	µg/L	1	40937	5/5/2006 11:27:00 AM
Carbon Disulfide	ND			0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
Ethyl methacrylate	ND			5.00	µg/L	1	40937	5/5/2006 11:27:00 AM
2-Hexanone	ND			5.00	µg/L	1	40937	5/5/2006 11:27:00 AM
Iodomethane	ND			0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
Methyl methacrylate	ND			5.00	µg/L	1	40937	5/5/2006 11:27:00 AM
4-Methyl-2-pentanone (MIBK)	ND			5.00	µg/L	1	40937	5/5/2006 11:27:00 AM
Methyl tert-butyl ether (MTBE)	ND			0.50	µg/L	1	40937	5/5/2006 11:27:00 AM
Tetrahydrofuran	ND			5.00	µg/L	1	40937	5/5/2006 11:27:00 AM
Vinyl Acetate	ND			5.00	µg/L	1	40937	5/5/2006 11:27:00 AM

Qualifiers:

- * Value exceeds Maximum Contaminant Level
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits

REFERENCE 14

TALEM, INC.

ANALYTICAL REPORT

TALEM ENVIRONMENTAL SERVICES
610 SOUTH JENNINGS AVENUE
FORT WORTH, TX 76104
TEL: (817) 335-1186
FAX: (817) 335-9830

Date of Report: 06/20/2006

TALEM SRV No: 115577
Date Collected: 06/19/2006 Time: 09:45
Collected By: nrw
Date Received: 06/19/2006

Attention: Joe Hines
City of Willow Park
101 Stagecoach Trail
Willow Park TX 76087

TALEM Project No: 06063348
TALEM Lab ID No: 06-0007771

Sample Matrix: Water

Client Account No: 785
Client Project No: Willow Oaks Springs
Sample Description: Influent (Well)

	Result	Unit	Dltn Fctr	Test Procedure	LOQ	A/I	Test Date	Test Time	QC Ref Number
ORGANIC									
GCMS VOC									
Trichloroethene	6.8	ug/L	1	EPA624	2.0	JJL	06/19	10:58	99845

TALEM, INC.

ANALYTICAL REPORT

TALEM ENVIRONMENTAL SERVICES
610 SOUTH JENNINGS AVENUE
FORT WORTH, TX 76104
TEL: (817) 335-1186
FAX: (817) 335-9830

Date of Report: 06/20/2006

TALEM SRV No: 115577
Date Collected: 06/19/2006 Time: 09:52
Collected By: nrw
Date Received: 06/19/2006

Attention: Joe Hines
City of Willow Park
101 Stagecoach Trail
Willow Park TX 76087

TALEM Project No: 06063348
TALEM Lab ID No: 06-0007772

Sample Matrix: Water

Client Account No: 785
Client Project No: Willow Oaks Springs
Sample Description: Effluent (Post filter)

	Result	Unit	Dltn Fctr	Test Procedure	LOQ	A/I	Test Date	Test Time	QC Ref Number
ORGANIC									
GCMS VOC									
Trichloroethene	<2.0	ug/L	1	EPA624	2.0	JJL	06/19	10:58	99845

Distribution of Report
Joe Hines

Reviewed and Approved By:

Emmanuel A. Young
Laboratory Director

Joe Hines
City of Willow Park
101 Stagecoach Trail
Willow Park TX 76087

SDG Number: 06063348

****
--->> M A T R I X S P I K E A C C U R A C Y D A T A <<---
****

QC Number	Test Name	NSR	MS	MS%	MSD	MSD%	SC	LL	UL	F	Smpl ID
Organics											
99845	Trichloroethene	0	20	100	20	100	20.	61	143		0007772

****
--->> L C S A C C U R A C Y D A T A <<---
****

QC Number	Test Name	True Val	Measured	Rcvry	Measured	Rcvry	LL	UL	F
Organics									
99845	Trichloroethene	20	19	95.	n/a	n/a	71	133	

****
--->> M A T R I X S P I K E P R E C I S I O N D A T A <<---
****

QC Number	Test Name	LOQ	M S	M S D	Range	RPD	UL	F	Smpl ID
Organics									
99845	Trichloroethene	2.	20	20	n/a	0.0	22		0007772

****
--->> L C S P R E C I S I O N D A T A <<---
****

QC Number	Test Name	LOQ	LCS MV	LCSD MV	Range	RPD	UL	F	LCS ID
Organics									
99845	Trichloroethene	2.	19		n/a	n/a	22		1165-162-

Joe Hines
City of Willow Park
101 Stagecoach Trail
Willow Park TX 76087

SDG Number: 06063348

****
-->> METHOD BLANK DATA <<--
****

QC Number	Test Name	Method Blank	LOQ	Unit
Organics				
99845	Trichloroethene	< 2	2	ug/L

Joe Hines
City of Willow Park
101 Stagecoach Trail
Willow Park TX 76087

Project Number: 06063348
C-of-C Number: 115577

****
--->> S U R R O G A T E A C C U R A C Y D A T A <<---
****

QC Number 99845 Procedure EPA624

1,2-Dichloroethane-d4

Surro Type	True Val	Measured	%Rec	LL	UL	F	Dup Range	LOQ	RPD	RPD UL
Blank	50.	44.	88	64	133					
LCS	50.	50.	100	64	133					
MS	50.	52.	104	64	133					
MSD	50.	52.	104	64	133		N/A	5	0.00	25

4-Bromofluorobenzene

Surro Type	True Val	Measured	%Rec	LL	UL	F	Dup Range	LOQ	RPD	RPD UL
Blank	50.	45.	90	60	129					
LCS	50.	47.	94	60	129					
MS	50.	46.	92	60	129					
MSD	50.	47.	94	60	129		N/A	5	2.15	22

Toluene-d8

Surro Type	True Val	Measured	%Rec	LL	UL	F	Dup Range	LOQ	RPD	RPD UL
Blank	50.	45.	90	76	125					
LCS	50.	48.	96	76	125					
MS	50.	48.	96	76	125					
MSD	50.	48.	96	76	125		N/A	5	0.00	15

06	0007771	50.	50.	100	64	133	1,2-Dichloroethane-d4
06	0007771	50.	47.	94	60	129	4-Bromofluorobenzene
06	0007771	50.	48.	96	76	125	Toluene-d8
06	0007772	50.	50.	100	64	133	1,2-Dichloroethane-d4
06	0007772	50.	48.	96	60	129	4-Bromofluorobenzene
06	0007772	50.	48.	96	76	125	Toluene-d8

Preserving natural resources in a changing world™

TALEM, INC.
Environmental Chemistry & Compliance Specialists™

Log-In Received LAM Date 6-19-06

VARIANCE / CORRECTIVE ACTION REPORT – SAMPLE LOG-IN

Account No.: 785 Client:: City of Willow Park Date/Time: 6/19/06 1122

Work Order: 10901 Samples Delivered By: TALEM field

SRV #: 115577 Tracking #: ~~~~~~~~~~

Lab Project #: 6063348 Sample IDs: 7771 7772 Checklist Completed by JB

Sample Receipt Checklist

Shipping Container/Cooler in Good Condition?	Yes ☑	No ☐		Meets Client Spec ☐
Temperature of Representative Sample			5.6 °C	Meets Client Spec ☐
Samples Received on Ice?	Yes ☑	No ☐		Meets Client Spec ☐
Custody Seals Intact on Shipping Container/Cooler?	Yes ☐	No ☐	Not Present ☑	Meets Client Spec ☐
Custody Seals Intact on Sample Bottles?	Yes ☐	No ☐	Not Present ☑	Meets Client Spec ☐
Chain of Custody Present?	Yes ☑	No ☐		Meets Client Spec ☐
Sample Instructions Complete on Chain of Custody?	Yes ☑	No ☐		Meets Client Spec ☐
Chain of Custody Signed When Relinquished and Received?	Yes ☑	No ☐		Meets Client Spec ☐
Container Labels Legible & Intact?	Yes ☑	No ☐		Meets Client Spec ☐
Chain of Custody Agrees with Sample Label(s)?	Yes ☑	No ☐		Meets Client Spec ☐
Sample Matrix & Properties Same as on Chain of Custody?	Yes ☑	No ☐		Meets Client Spec ☐
Sample Container Intact?	Yes ☑	No ☐		Meets Client Spec ☐
Sample(s) in Proper Container/Bottle?	Yes ☑	No ☐		Meets Client Spec ☐
Samples Properly Preserved?	Yes ☑	No ☐		Meets Client Spec ☐
Preservation Documented on Chain of Custody?	Yes ☑	No ☐		Meets Client Spec ☐
Containers Documented on Chain of Custody?	Yes ☑	No ☐		Meets Client Spec ☐
Sufficient Sample Amount for Indicated Test?	Yes ☑	No ☐		Meets Client Spec ☐
All Samples Received within Sufficient Hold Time?	Yes ☑	No ☐		Meets Client Spec ☐
VOC Samples have Zero Headspace?	Yes ☐	No ☐	Not Applicable ☐	

OTHER OBSERVATIONS: _____

_____

Any NO that does not MEET CLIENT SPEC must be detailed in the section below.

VARIANCE DOCUMENTATION

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Regarding: _____

_____

Corrective Action Taken: _____

_____

_____ QAA Review: (Initials) _____ (Date) _____

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SRV # 115577
Temp. _____

Turn-Around-Times		Fee
☐ Emergency Response	24 hrs or ASAP	TBD
☐ Priority Rush	1-2 working days	2.0 X
☐ Regular Rush	3-5 working days	1.5 X
☐ Normal	10 working days	1.0 X

Contact: Joe Hinds
Company: Willow Park
Address:
Remarks: 0.6°C - Yes
P.O.#:
Telephone:
Samplers: Nik Walker / Niki Walker
Project No:
Project Name/Location: Willow Oaks Springs

LAB No.	SAMPLE INFORMATION		COLLECTION		TYPE		CONTAINER/PRESERVATION						ANALYTES
	Sample Identification	Matrix	Date	Time	G	C	#	Size	G	P	Preservation	ZH	TUE
1 7771	Influent (Well)	WA	6-19-06	0945	X		3	40mL	X		HCL	✓	X
2 7772	Effluent (Post filter)	WA	6-19-06	0952	X		3	40mL	X		HCL	✓	X

Relinquished by:	Date/Time	Received by:	Relinquished by:	Date/Time	Received by:
Sign: NWW 6-19-06	6-19-06	Sign: Nik Walker	Sign:		Sign:
Print:	0952	Print: Niki Walker	Print:		Print:
Relinquished by:	Date/Time	Received by:	Relinquished by:	Date/Time	Received by:
Sign:		Sign	Sign:		Sign:
Print:		Print:	Print:		Print:

REFERENCE 15

WATER WELL SAMPLING EVENT

TCEQ-Willow Park
Willow Park, Texas

Prepared For:

Field Operations Division
Texas Commission on
Environmental Quality

Prepared By:

Eagle Construction and
Environmental Services, L.P.
9204 Hwy 287 NW
Fort Worth, Texas 76131

June 2006

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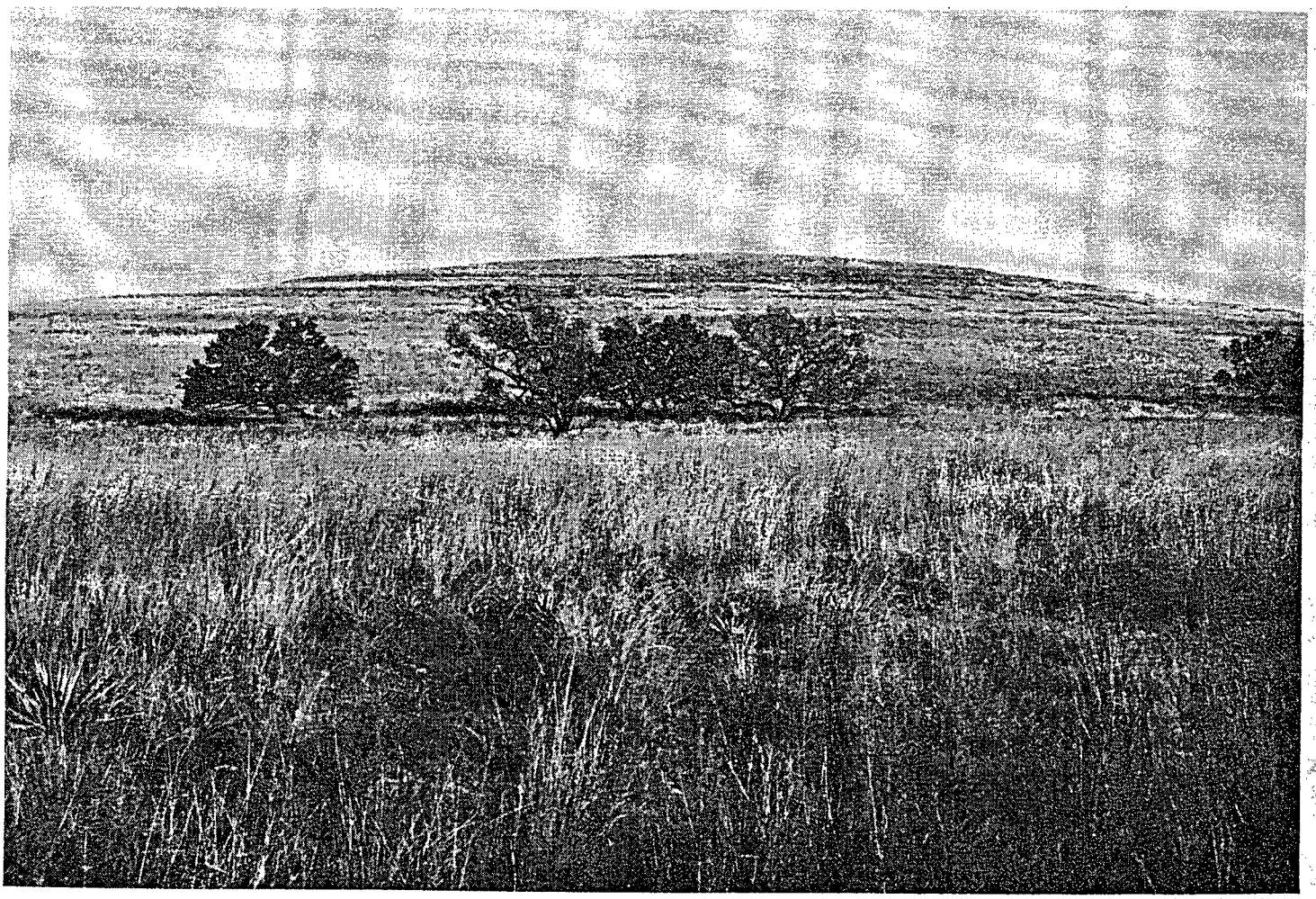
REFERENCE 16

SOIL SURVEY OF

Parker County, Texas



United States Department of Agriculture
Soil Conservation Service
in cooperation with
Texas Agricultural Experiment Station

Contents

Issued June 1977

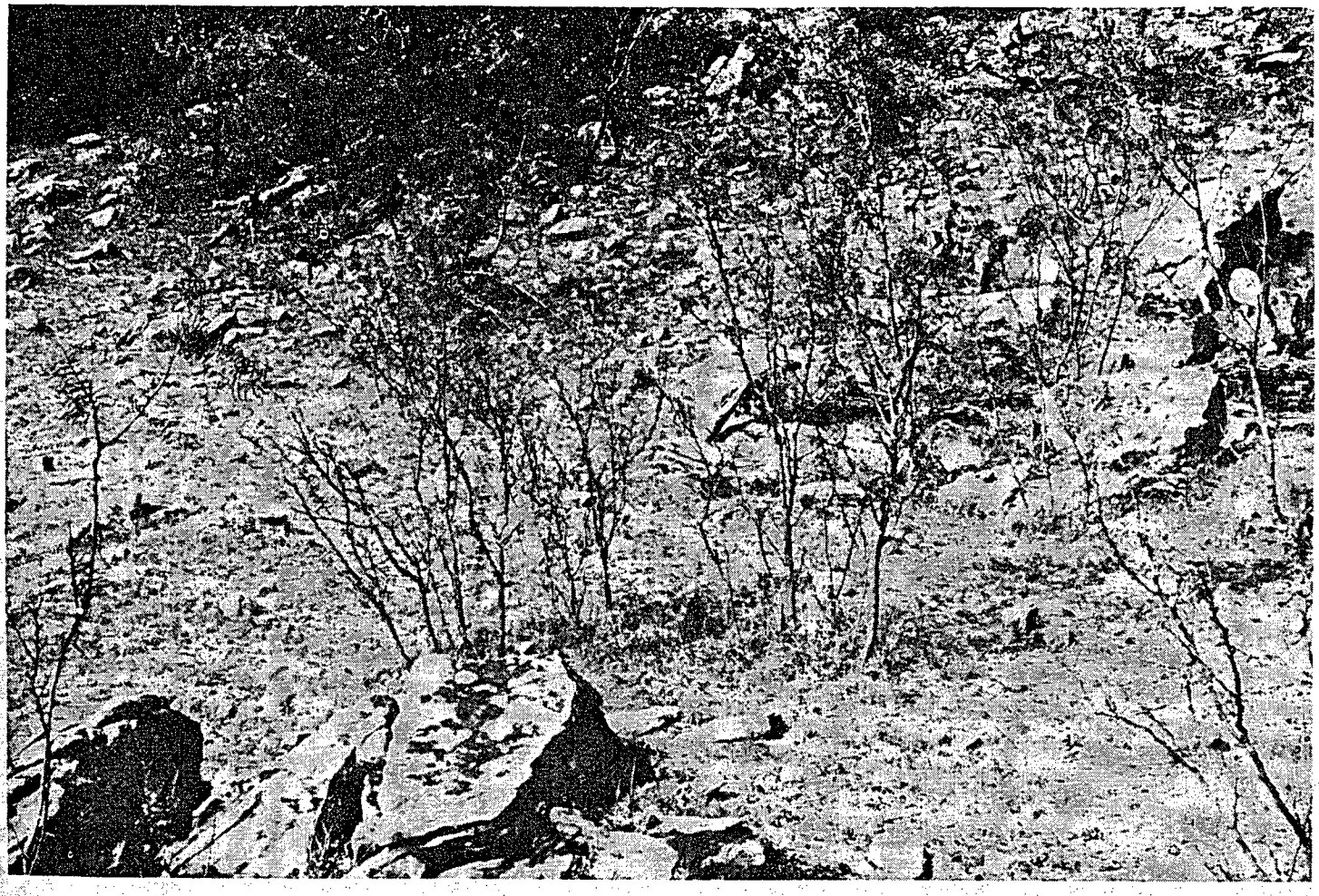


Figure 7.—**Bonti and Truce soils, 1 to 8 percent slopes. Sandstone outcrop in foreground.**

subangular blocky structure; hard, firm; common very fine roots and pores; many very fine threads and films of calcium carbonate; calcareous, moderately alkaline; gradual, wavy boundary.

IIBb—55 to 60 inches, brown (10YR 5/3) sandy clay loam, brown (10YR 4/3) moist; massive; very hard, friable; many films, threads, and soft masses of calcium carbonate; calcareous, moderately alkaline.

The A horizon is dark grayish brown, grayish brown, brown, dark brown, or very dark grayish brown. It is 20 to 35 inches thick.

The B2 horizon is brown, grayish brown, or light brownish gray. It is fine sandy loam, loam, or clay loam.

The depth to the buried horizon is 24 to more than 60 inches.

Bo—Bosque loam, occasionally flooded. This nearly level soil is on bottom land that is occasionally flooded. Mapped areas are elongated and follow the contour of drainageways. Areas range from 5 to more than 200 acres in size, but average about 25 acres. Slopes are 0 to 1 percent.

Included with this soil in mapping is a soil that is similar to the Bosque soil but has a lighter colored surface layer; a few areas of fine sandy loam; small areas of Blanket, Krum, and Venus soils along slightly higher positions; and small areas of Bunyan and Frio soils. Also included are small areas of a soil that is similar to the Bosque soil but has less than 24 inches of recent overburden. Inclusions make up less than 20 percent of any one mapped area.

The hazard of water erosion is slight, but soil areas are subject to flooding. They are flooded as often as one or more times in 4 to 10 years, mainly in May or September. Most areas are flooded for 24 hours or less.

Most of the acreage is for crops. Some areas are established to pasture. Capability unit IIw–1; Loamy Bottom Land range site; pasture group 2A.

Brackett Series

The Brackett series consists of shallow, gently sloping to steep, calcareous loamy soils on uplands. These soils formed in material weathered from interbedded limestone and calcareous clay loam.

In a representative profile the surface layer is light brownish-gray, calcareous clay loam about 4 inches thick. The next 10 inches is light-gray calcareous loam. The underlying material is weakly cemented limestone and calcareous pale-yellow clay loam.

These soils are well drained. Runoff is rapid. Permeability is moderately slow, and the available water capacity is very low.

Brackett soils are used mainly as range. A few areas in and near Weatherford are used for urban development.

Representative profile of Brackett clay loam, in an area of Brackett and Maloterre soils, 3 to 12 percent slopes, 5.3 miles southwest of Springtown via Farm Road 51, then 0.7 mile west, then north and east 2 miles on county road, then west of road 75 feet from fence:

A1—0 to 4 inches, light brownish-gray (10YR 6/2) clay loam, brown (10YR 5/3) moist; moderate, fine, granular structure; hard, friable; many fine pores; few fossil shells and rock fragments; about 60 percent calcium carbonate equivalent; calcareous, moderately alkaline; clear, wavy boundary.

B2—4 to 14 inches, light-gray (10YR 7/2) loam, pale brown (10YR 6/3) moist; moderate, medium, subangular blocky structure; hard, friable; few pores; 60 percent calcium carbonate equivalent; common fine calcium carbonate concretions and limestone shell fragments; calcareous, moderately alkaline; abrupt, wavy boundary.

C—14 to 30 inches, thinly interbedded, weakly and strongly cemented fossil limestone and calcareous pale-yellow clay loam.

The soil is 5 to 35 percent coarse limestone fragments and more than 40 percent calcium carbonate. The A horizon is 3 to 12 inches thick. It is light brownish gray, light gray, grayish brown, or brown and is clay loam, loam, or gravelly loam.

The B horizon is 4 to 16 inches thick. It is light gray, light brownish gray, pale yellow, yellowish brown, light yellowish brown, very pale brown, or pale brown.

Depth to the C horizon is 10 to 20 inches. It is light brownish gray, very pale brown, or pale yellow and is loam, clay loam, or marl intermixed with limestone fragments.

BrE—Brackett-Urban land complex, 3 to 12 percent slopes. This mapping unit occurs as gently sloping to strongly sloping breaks throughout the city of Weatherford. It is about 45 percent Brackett soils, 20 percent Urban land, and 35 percent soils of minor extent. Areas are long and irregular in shape and follow the contour of ridges and other landforms. They range from 5 to more than 150 acres in size.

In an undisturbed area Brackett soil has a surface layer of light brownish-gray gravelly clay loam about 4 inches thick. The next 10 inches is light-gray loam. The underlying material is limestone and pale-yellow clay loam.

Urban land is developed for single-unit dwellings and streets, driveways, sidewalks, and patios. Small businesses and paved parking lots are in a few areas. Most structures are on the less sloping narrow ridges and foot slopes.

Included with this unit in mapping are small areas of Aledo, Maloterre, and Purves soils on ridgetops and small areas of Bolar, Lamar, and Venus soils on foot slopes. Also included are a few rock outcrops along ridgetops.

Urban development has been less on this mapping unit than elsewhere in the county. Where urban structures have been planned, soils and landforms were altered to prepare sites, create trafficways, or provide a better environment for growing lawns and landscape plants. Cuts and fills 2 to 6 feet deep were made in places to prepare building foundations or to level yards. Stones were removed, and yards were topdressed with imported soil. The main concern in urban development is shaping the underlying limestone and marl preparatory to site leveling, street construction, or trenching for utilities. Other limitations are slope, stoniness, and seasonal seepage. Not assigned to a capability unit, range site, or pasture group.

BsE—Brackett and Maloterre soils, 3 to 12 percent slopes. This gently sloping to strongly sloping mapping unit is on upland ridges. Areas are longer than they are wide and follow the contour of hills and ridges (fig. 8). Areas range from 5 to 400 acres in size, but are mostly about 70 acres.

Average composition of this mapping unit is 50 percent Brackett soil, 22 percent Maloterre soil, and 28 percent soils of minor extent, but composition is variable. Brackett soils are dominant and make up 40 to 80 percent of mapped areas. They are along side slopes and usually have a slope of 5 to 12 percent. Maloterre soils, where present, make up 10 to 40 percent of the mapped areas. They are along the more nearly level ridgetops and usually have a slope of 3 to 5 percent.

Brackett soils have the profile described as representative of the Brackett series. They are as much as 35 percent limestone gravel, cobbles, and fossil fragments. Maloterre soils have a surface layer of grayish-brown gravelly clay loam about 8 inches thick. The underlying material is indurated limestone that contains many fossil shells.

Included with this unit in mapping are a few small areas where slopes are as much as 20 percent; areas of a soil that is similar to Brackett soil but that contains more coarse limestone fragments; small areas of Bolar, Lamar, and Venus soils along foot slopes; and small areas of Aledo soils along slightly higher ridges.

Most of this mapping unit is used as range. It is also suited to cultivation. The hazard of water erosion is moderate. Capability unit VIs–1; Steep Adobe range site; not assigned to a pasture group.

BsG—Brackett and Maloterre soils, 12 to 30 percent slopes. This moderately steep to steep mapping unit is on ridges and hills in the uplands. Areas are elongated and follow the contour of sloping ridges. They range from 10 to more than 50 acres in size, but average about 30 acres.

Average composition of this mapping unit is 57 percent Brackett soils, 20 percent Maloterre soils, and 23 percent soils of minor extent, but composition is variable. Brackett soils are dominant and make up 40 to 80 percent of the unit. They are on the more sloping sides of ridges. Maloterre soils, where present, make up 10 to 30 percent of areas. They are along ridgetops.

Brackett soils contain as much as 35 percent gravel and cobble-size fragments. As much as 35 percent of their surface is covered by limestone gravel, cobbles, and shell fragments. The surface layer is grayish-brown clay loam about 4 inches thick. The next 12 inches is light yellowish-brown clay loam. The underlying material is calcareous pale-yellow marl.

Maloterre soils have a surface layer of grayish-brown gravelly clay loam about 4 inches thick. The underlying material is indurated limestone and imbedded fossil shells.

Included with this unit in mapping are small areas where slopes are less than 12 percent; areas of a soil that is similar to Brackett soil but that contains more coarse fragments; small areas of Bolar, Lamar, and Venus soils along foot slopes; and small areas of Aledo and Purves soils along narrow ridges.

S — SHEET NUMBER 38

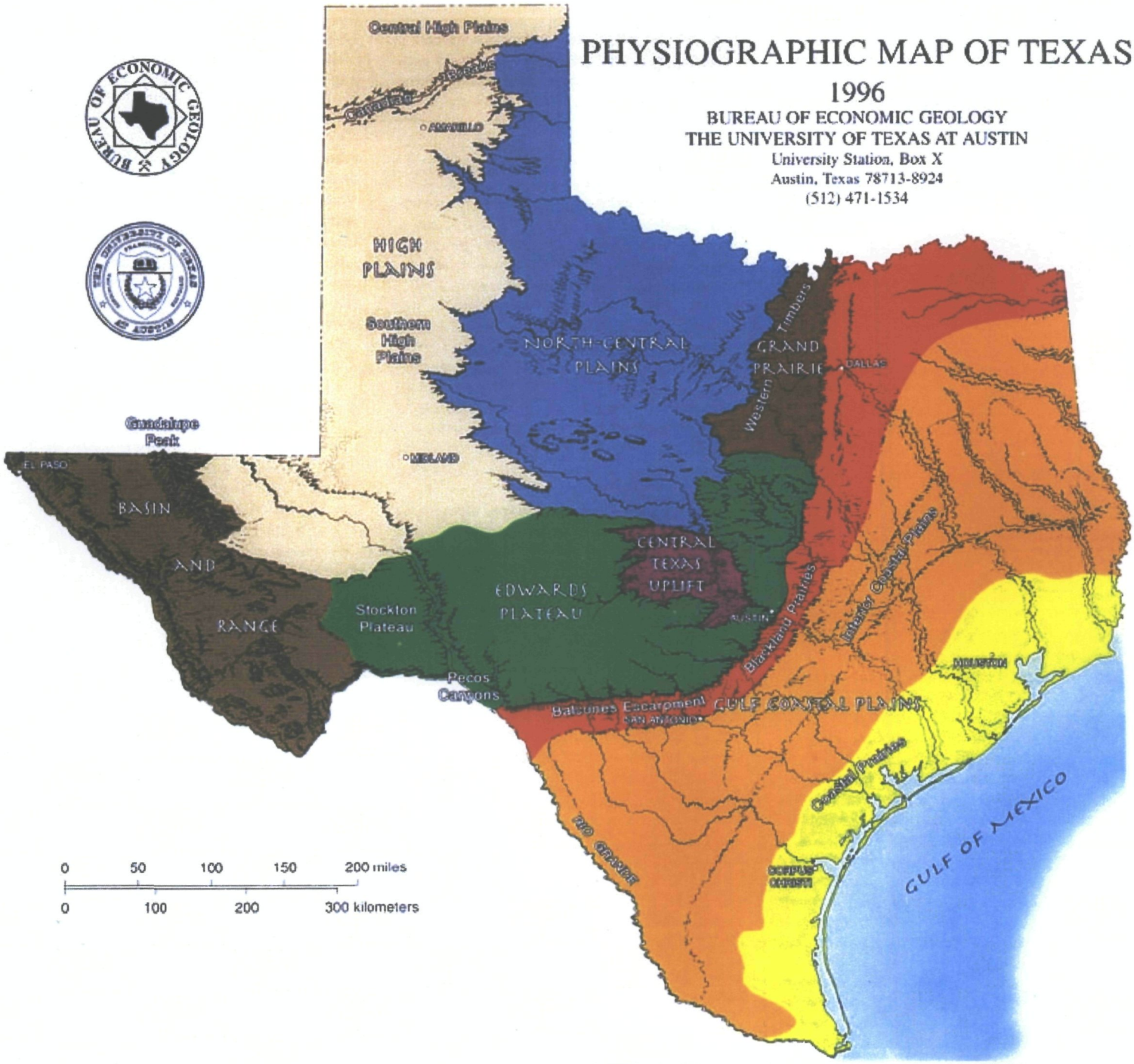
This map is compiled on 1973 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.
Coordinate grid ticks and land division corners, if shown, are approximately positioned

REFERENCE 17

PHYSIOGRAPHIC MAP OF TEXAS

1996

BUREAU OF ECONOMIC GEOLOGY
THE UNIVERSITY OF TEXAS AT AUSTIN
University Station, Box X
Austin, Texas 78713-8924
(512) 471-1534



Pprovince	Max. elev. (ft)	Min. elev. (ft)	Topography	Geologic structure	Bedrock types
Gulf Coastal Plains					
Coastal Prairies	300	0	Nearly flat prairie, <1 ft/mi to Gulf	Nearly flat strata	Deltaic sands and muds
Interior Coastal Plains	800	300	Parallel ridges (questas) and valleys	Beds tilted toward Gulf	Unconsolidated sands and muds
Blackland Prairies	1000	450	Low rolling terrain	Beds tilted south and east	Chalks and marls
Grand Prairie	1250	450	Low stairstep hills west; plains east	Strata dip east	Calcareous east; sandy west
Edwards Plateau					
Principal	3000	450	Flat upper surface with box canyons	Beds dip south; normal faulted	Limestones and dolomites
Pecos Canyons	2000	1200	Steep-walled canyons		Limestones and dolomites
Stockton Plateau	4200	1700	Mesa-formed terrain; highs to west	Unfaulted, near-horizontal beds	Carbonates and alluvial sediments
Central Texas Uplift	2000	800	Knobby plain; surrounded by questas	Centripetal dips, strongly faulted	Granites; metamorphics; sediments
North-Central Plains	3000	900	Low north-south ridges (questas)	West dip; minor faults	Limestones; sandstones; shales
High Plains					
Central	4750	2900	Flat prairies slope east and south	Slight dips east and south	Eolian silts and fine sands
Canadian Breaks	3800	2350	Highly dissected; local solution valleys		
Southern	3800	2200	Flat; many playas; local dune fields		
Basin and Range	8750	1700	North-south mountains and basins	Some complex folding and faulting	Igneous; metamorphics; sediments

Physiography of Texas

Geologists study the natural scenery of Texas and sort its variations into distinctive physiographic provinces. Each province or landscape reflects a unified geological history of depositional and erosional processes. Each physiographic province is distinguished by characteristic geologic structure, rock and soil types, vegetation, and climate. The elevations and shapes of its landforms contrast significantly with those of landforms in adjacent regions. The *Physiographic Map of Texas* displays seven physiographic provinces and their principal subdivisions; the accompanying table describes their major physical differences. The following descriptions selectively emphasize those characteristics that distinguish provinces and their subdivisions.

Gulf Coastal Plains. The Gulf Coastal Plains include three subprovinces named the Coastal Prairies, the Interior Coastal Plains, and the Blackland Prairies. The Coastal Prairies begin at the Gulf of Mexico shoreline. Young deltaic sands, silts, and clays erode to nearly flat grasslands that form almost imperceptible slopes to the southeast. Trees are uncommon except locally along streams and in oak mottes, growing on coarser underlying sediments of ancient streams. Minor steeper slopes, from 1 foot to as much as 9 feet high, result from subsidence of deltaic sediments along faults. Between Corpus Christi and Brownsville, broad sand sheets pocked by low dunes and blowouts forming ponds dominate the landscape.

The Interior Coastal Plains comprise alternating belts of resistant uncemented sands among weaker shales that erode into long, sandy ridges. At least two major down-to-the-coast fault systems trend nearly parallel to the coastline. Clusters of faults also concentrate over salt domes in East Texas. That region is characterized by pine and hardwood forests and numerous permanent streams. West and south, tree density continuously declines, pines disappear in Central Texas, and chaparral brush and sparse grasses dominate between San Antonio and Laredo.

On the Blackland Prairies of the innermost Gulf Coastal Plains, chalks and marls weather to deep, black, fertile clay soils, in contrast with the thin red and tan sandy and clay soils of the Interior Gulf Coastal Plains. The blacklands have a gentle undulating surface, cleared of most natural vegetation and cultivated for crops.

From sea level at the Gulf of Mexico, the elevation of the Gulf Coastal Plains increases northward and westward. In the Austin–San Antonio area, the average elevation is about 800 feet. South of Del Rio, the western end of the Gulf Coastal Plains has an elevation of about 1,000 feet.

Grand Prairie. The eastern Grand Prairie developed on limestones; weathering and erosion have left thin rocky soils. North and west of Fort Worth, the plateaulike surface is well exposed, and numerous streams dissect land that is mostly flat or that gently slopes southeastward. There, silver bluestem–Texas wintergrass grassland is the flora. Primarily sandstones underlie the western margin of the Grand Prairie, where post oak woods form the Western Cross Timbers.

Edwards Plateau. The Balcones Escarpment, superposed on a curved band of major normal faults, bounds the eastern and southern Edwards Plateau. Its principal area includes the Hill Country and a broad plateau. Stream erosion of the fault escarpment sculpts the Hill Country from Waco to Del Rio. The Edwards Plateau is capped by hard Cretaceous limestones. Local streams entrench the plateau as much as 1,800 feet in 15 miles. The upper drainages of streams are waterless draws that open into box canyons where springs provide permanently flowing water. Sinkholes commonly dot the limestone terrane and connect with a network of caverns. Alternating hard and soft marly limestones form a stairstep topography in the central interior of the province.

The Edwards Plateau includes the Stockton Plateau, mesalike land that is the highest part of this subdivision. With westward-decreasing rainfall, the vegetation grades from mesquite–juniper brush westward into creosote bush–tarbush shrubs.

The Pecos River erodes a canyon as deep as 1,000 feet between the Edwards and Stockton Plateaus. Its side streams become draws forming narrow blind canyons with nearly vertical walls. The Pecos Canyons include the major river and its side streams. Vegetation is sparse, even near springs and streams.

Central Texas Uplift. The most characteristic feature of this province is a central basin having a rolling floor studded with rounded granite hills 400 to 600 feet high. Enchanted Rock State Park is typical of this terrain. Rocks forming both basin floor and hills are among the oldest in Texas. A rim of resistant lower Paleozoic formations (see the *Geology of Texas* map) surrounds the basin. Beyond the Paleozoic rim is a second ridge formed of limestones like those of the Edwards Plateau. Central live oak–mesquite parks are surrounded by live oak–ashe juniper parks.

North-Central Plains. An erosional surface that developed on upper Paleozoic formations forms the North-Central Plains. Where shale bedrock prevails, meandering rivers traverse stretches of local prairie. In areas of harder bedrock, hills and rolling plains dominate. Local areas of hard sandstones and limestones cap steep slopes severely dissected near rivers. Lengthy dip slopes of strongly fractured limestones display extensive rectangular patterns. Western rocks and soils are oxidized red or gray where gypsum dominates, whereas eastern rocks and soils weather tan to buff. Live oak–ashe juniper parks grade westward into mesquite–lotebush brush.

High Plains. The High Plains of Texas form a nearly flat plateau with an average elevation approximating 3,000 feet. Extensive stream-laid sand and gravel deposits, which contain the Ogallala aquifer, underlie the plains. Windblown sands and silts form thick, rich soils and caliche locally. Havard shin oak–mesquite brush dominates the silty soils, whereas sandsage–Havard shin oak brush occupies the sand sheets. Numerous playa lakes scatter randomly over the treeless plains. The eastern boundary is a westward-retreating escarpment capped by a hard caliche. Headwaters of major rivers deeply notch the caprock, as exemplified by Palo Duro Canyon and Caprock Canyons State Parks.

On the High Plains, widespread small, intermittent streams dominate the drainage. The Canadian River cuts across the province, creating the Canadian Breaks and separating the Central High Plains from the Southern High Plains. Pecos River drainage erodes the west-facing escarpment of the Southern High Plains, which terminates against the Edwards Plateau on the south.

Basin and Range. The Basin and Range province contains eight mountain peaks that are higher than 8,000 feet. At 8,749 feet, Guadalupe Peak is the highest point in Texas. Mountain ranges generally trend nearly north-south and rise abruptly from barren rocky plains.

Plateaus in which the rocks are nearly horizontal and less deformed commonly flank the mountains. Cores of strongly folded and faulted sedimentary and volcanic rocks or of granite rocks compose the interiors of mountain ranges. Volcanic rocks form many peaks. Large flows of volcanic ash and thick deposits of volcanic debris flank the slopes of most former volcanoes. Ancient volcanic activity of the Texas Basin and Range province was mostly explosive in nature, like Mount Saint Helens. Volcanoes that poured successive lava flows are uncommon. Eroded craters, where the cores of volcanoes collapsed and subsided, are abundant.

Gray oak–pinyon pine–alligator juniper parks drape the highest elevations. Creosote bush and lechuguilla shrubs sparsely populate plateaus and intermediate elevations. Tobosa–black grama grassland occupies the low basins.

The *Physiographic Map of Texas* is a useful guide to appreciate statewide travel. Texas abounds with vistas of mountains, plateaus, plains, hills, and valleys in which many rock types and geologic structures are exposed. A variety of vegetation grows, depending on local climate.

—Text by E. G. Wermund

Bureau of Economic Geology

The **Bureau of Economic Geology,** established in 1909, is a research entity of The University of Texas at Austin and also functions as the State Geological Survey. The Bureau conducts basic and applied research projects in energy and mineral resources, coastal and environmental studies, land resources, and geologic mapping. Reports and maps published by the Bureau are available for a nominal price. A list of publications is available on request.

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REFERENCE 18

TEXAS DEPARTMENT OF WATER RESOURCES

REPORT 269

OCCURRENCE, AVAILABILITY, AND CHEMICAL QUALITY OF GROUND WATER IN THE CRETACEOUS AQUIFERS OF NORTH-CENTRAL TEXAS

VOLUME 1

By

Phillip L. Nordstrom, Geologist

April 1982

dissected into steep hills and deep ravines. The very sandy soil supports a heavy growth of post oak and blackjack oak.

The Grand Prairie is underlain by alternating limestones and marls of the Washita and Fredericksburg Groups. The intervening marls form low escarpments that connect successive uplands and produce a "cuesta" topography. The surfaces of the terraces slope gently eastward, broken only by the westward-facing escarpments. The thin mantle of light brown to black loamy soil is well drained and its characteristics differ depending on the nature of the underlying material. The broad, gently rolling, grass-covered plain is usually treeless except for isolated clumps of upland timber.

The Eastern Cross Timbers coincides with the narrow belt of the Woodbine Group outcrop and is characterized by low, rounded, wooded hills along the western margin and gentle slopes along the eastern margin. It is well d ssected by streams leaving some areas quite rugged in appearance. The soil is reddish sand with iron concretions and some clay. The surface supports a dense growth of timber, consisting chiefly of post oak and blackjack oak.

The remaining Cretaceous formations and the Midway Group form the base of the Black Prairie. It is characterized by a relatively flat to gently undulating surface that slopes gently to the east. The Black Prairie is poorly drained constituting the famous blackland soil and relatively treeless.

A small part of the study region falls within the East Texas Timber Belt which is underlain by the Wilcox and has a sandy, slightly hummocky surface.

Land-surface elevations range from 1,450 feet (442 m) in the west to 250 feet (76 m) above mean sea level in the northeast. The 20-county area lies within the Red, Sulphur, Sabine, Trinity, and Brazos River basins. Drainage is to the southeast.

Climate

The climate of the region covered by this report is characterized by long, hot summers and short, mild winters. The average minimum temperature for January, the coldest month, ranges from 32°F (0°C) in the northwest to 36°F (2°C) in the southeast. The average maximum temperature for July, the hottest month, is 96°F (36°C) throughout most of the study area. The annual mean free air temperature for the period 1931-70 averaged 65" F (18°C).

The average annual precipitation ranges from 30 inches (76 cm) in the northwest to 45 inches (114 cm) in the northeast. These figures are based on National Weather Service records for the 77-year period 1900-76, and are illustrated on Figure 2 along with average monthly precipitation for periods of record at selected stations.

The average annual gross lake surface evaporation for the period 1940-70 ranges from 78 inches (198 cm) in the north-central area to 61 inches (155 cm) in the southeast.

Population

According to the 1978-79 Texas Almanac, the estimated 1975 populatior for the study region is over 2.75 million people, which is an average of 180 people per square mile (69.5 per km^2). This represented about 25 percent of the State's population. More than 85 percent of the people in this region lived in urban areas having 2,500 or more inhabitants. Some of the urban areas are Bonham, Clarksville, Cleburne, the Dallas-Fort Worth metroplex, Decatur, Denton, Gainesville, Granbury, Greenville, Lewisville, McKinney, Paris, Plano, Sherman, Waxahachie, and Weatherford. The remaining inhabitants lived in rural areas or smaller communities.

Economy

The general economy is varied. Principal manufacturing plants are in or near large cities; however, some plants in smaller cities process local products. Manufacturing, transportation, business, and insurance are of primary importance in the Dallas-Fort Worth area. About one-third of the counties in the study region produce petroleum products. Cooke and Montague Counties have produced about 475 million barrels of oil since the mid-1920's. Agricultural economy, which averages about 230 million dollars per year, consists of cattle and poultry raising and dairy products with grain, grain sorghums, peanuts, cotton, and soybeans the principal crops. Industrial activities include the operation of sand and gravel pits, the production of clay and manufacture of brick and tile products, the production of cement materials, and the manufacture of cement.

Previous Investigations

Portions of the study region have been previously discussed in numerous publications related to geology

water-bearing formations in north-central Texas are of Cretaceous age.

The Cretaceous System is composed of two series, Gulf and Comanche, and each is divided into groups. The Gulf Series is divided into the following five groups: Navarro, Taylor, Austin, Eagle Ford, and Woodbine. The Comanche Series is divided into the following three groups: Washita, Fredericksburg, and Trinity.

The Taylor and Eagle Ford Groups consist predominantly of shale, limestone, clay, and marl and yield only small amounts of water in localized areas. The Navarro and Austin Groups consist of chalk, limestone, marl, clay, and sand and, except for the Nacatoch and Blossom Sands, yield only small amounts of water locally. The Nacatoch Sand of the Navarro Group and the Blossom Sand of the Austin Group yield small to moderate supplies of water to limited areas. The Woodbine Group is the only important aquifer of the Gulf Series in the area covered by this report. It consists of sand, sandstone, and clay and is capable of yielding small to large amounts of water. The Woodbine Group is discussed in detail in the sections covering the stratigraphy of the water-bearing formations and the occurrence and the availability of ground water.

Both the Washita and Fredericksburg Groups of the Comanche Series consist predominantly of limestone, shale, clay, and marl and yield only small amounts of water to localized areas. The Trinity Group is the principal water-bearing group of rocks in the region and is divided into the Paluxy, Glen Rose, Twin Mountains, and Antlers Formations. The Paluxy consists of sand and shale and is capable of yielding small to moderate amounts of water. The Glen Rose is predominantly a limestone and yields small quantities of water only to localized areas. The Twin Mountains is composed of conglomerate, sand, and shale. It is the principal water-bearing formation of Cretaceous age in the region and yields moderate to large amounts of water. The name Antlers Formation is applied north of the Glen Rose pinch-out, where the Paluxy and Twin Mountains coalesce to form one unit. Water-bearing members of the Trinity Group are discussed in detail in the sections covering stratigraphy of the water-bearing formations and occurrence and availability of ground water.

The relationship, approximate maximum thickness, brief description of lithology, and summary of water-bearing properties of the stratigraphic units are shown in Table 1. Outcrop areas of the various formations are illustrated on the geologic outcrop map (Figure 16). The altitude of the top of the formations and their net sand thicknesses are shown on Figures 18 through 22, 27, and 29.

Geologic cross-sections are profiles portraying an interpretation of a vertical section of the earth. Five geologic cross-sections were constructed; two are strike sections and three are dip sections. Dip sections are constructed approximately perpendicular to the strike of the beds and parallel to the dip of the beds, while strike sections are constructed parallel to the strike of the beds. These five geologic: sections, illustrated on Figures 35 through 39, show the structure and stratigraphic relationships of the geologic units.

Structure

Pennsylvanian and Permian rocks in the outcrop along the west edge of the study area dip westward and northwestward at about 40 feet per mile (7.6 m/km). Permian beds probably extend not much farther eastward than Montague County. The Pennsylvanian sediments, which underlie the Cretaceous rocks in most of the remaining area, thicken from the outcrop eastward into the Fort Worth basin. The axis of this basin and many of the other major structural features in or near the report area are shown on Figure 4.

The Cretaceous System forms a southeastward-thickening wedge extending across the area into a structural feature known as the East Texas basin. Thickness of these rocks ranges from zero in the west to nearly 7,500 feet (2,286 m) in the southeast. Regional dip is east and southeast at rates of about 15 to 40 feet per mile (2.8 to 7.6 m/km). The dip rate increases to as much as 300 feet per mile (57 m/km) on the southeastward-plunging ridge called the Preston anticline. This anticline and an associated trough to the south (Sherman syncline) have caused a change in the regional outcrop pattern as shown on the geologic map (Figure 16).

Tertiary System beds dip regionally southeastward from the Mexia-Talco fault system, which extends in a northerly direction along the eastern margin of the report area, at a rate of about 100 feet per mile (19 m/km). Deviations from this dip rate occur locally due to the faulting. These beds attain a thickness of approximately 250 feet (76 m) within the area of study. However, just outside the area of investigation in southern Navarro County they reach a maximum thickness in excess of 1,000 feet (305 m).

Quarternary deposits occur along the floodplains of the Brazos, Red, Sulphur, and Trinity Rivers and

silty clays, and siliceous conglomerates of chert, quartzite, and quartz pebbles.

The Twin Mountains consists of a basal conglomerate of chert and quartz, grading upward into coarse- to fine-grained sand interspersed with varicolored shale. The sand strata are more thickly bedded in the lower part of the formation than in the upper and middle and can be correlated to the Hosston Formation to the south. It is in this lower massive sand that the majority of wells are completed. Varicolored shale and clay, predominantly red, occur throughout the formation. The shale grades vertically and laterally into sandy shale and sand, making correlations over long distances almost impossible. The upper part of the Twin Mountains also contains a considerable percentage of sand and sandstone strata but less than the lower part due to the increased interbedding of shale and clay. Few wells are developed in the upper part of the formation.

Beds dip toward the east from 30 feet per mile (5.7 m/km) near the outcrop to 95 feet per mile (18 m/km) near the downdip limit of fresh to slightly saline water as illustrated on the geologic cross sections and Figure 19 which shows the approximate altitude of the top of the Twin Mountains. Thickness varies considerably over the study region, generally increasing downdip and ranging from less than 200 feet (61 m) near the outcrop to 860 feet (262 m) in oil test HR-33-28-401. However, data on cross section C-C' (Figure 37) indicate that maximum thickness at the downdip limit of fresh to slightly saline water should reach approximately 1,000 feet (305 m).

The Twin Mountains Formation is the most important source of ground water for a large part of the study region and yields moderate to large quantities of fresh to slightly saline water to municipal and industrial wells. In 1974, over 41,000 acre-feet (50.6 hm^3) of water was pumped from this aquifer for municipal and industrial uses.

Paluxy Formation

The Paluxy Formation is the upper member of the Trinity Group south of the Glen Rose pinch-out. It crops out in Hood, Parker, Tarrant, and Wise Counties and forms the surface of the Western Cross Timbers belt. The dip is easterly at an average rate of 30 feet per mile (5.7 m/km) near the outcrop, increasing to 80 feet per mile (15.2 m/km) near the downdip limit of fresh to slightly saline water as illustrated on the geologic sections and on Figure 18, which shows the approximate altitude of the top of the Paluxy and the extent of the outcrop in the study area.

The Paluxy is composed predominantly of fine- to coarse-grained, friable, homogeneous, white quartz sand interbedded with sandy, silty, calcareous, or waxy clay and shale. In general, coarse-grained sand is in the lower part. The Paluxy grades upward into fine-grained sand with variable amounts of shale and clay. The sands are usually well sorted, poorly cemented, and crossbedded. Pyrite and iron nodules are often associated with the sands and frequently contribute a red stain to the individual beds. In some areas along the outcrop, high iron concentrations are present in ground-water analyses.

Thickness of the Paluxy varies considerably throughout the study region. From a maximum thickness nearing 400 feet (122 m) in the northern part of the study area, the Paluxy thins to the south and southeast to less than 100 feet (30 m) with a net sand thickness of less than 40 feet (12 m). This thickness change is shown on the geologic sections and on Figure 20, which shows the approximate net thickness of sand and the downdip limit of fresh to slightly saline water.

The Paluxy Formation is an important aquifer in the study region and during 1974, produced over 10,000 acre-feet (12.3 hm^3) of water for municipal and industrial use and provided water to many domestic and livestock wells. Water wells tapping the Paluxy aquifer yield small to moderate quantities of fresh to slightly saline water.

Woodbine Group

The Woodbine Group is the basal rock unit of the Gulf Series of Cretaceous age in the study area. It crops out in Cooke, Dallas, Denton, Grayson, Johnson, and Tarrant Counties with a northeast-southwest strike. In the northern part of Texas, the outcrop parallels the Red River in a west-east strike, cropping out in Fannin, Lamar, and Red River Counties (Figure 16). The regional dip is to the southeast at an average rate of 35 feet per mile (6.63 m/km) near the outcrop and up to 75 feet per mile (14.2 m/km) near the downdip limit of fresh to slightly saline water as illustrated on the geologic sections and on Figure 21, which shows the approximate altitude of the top of the Woodbine.

In the southern part of the study area, the Woodbine is composed of friable, ferruginous, fine-grained sand and sandstone with interbedded shale, sandy shale, and laminated clay. The upper part of the Woodbine displays a marked increase in shale and clay, while the lower portion exhibits a more sandy make-up. Ripple marks and large-scale crossbedding are prevalent throughout the entire Woodbine Group.

in Hood, Parker, and Wise Counties. Forty-seven irrigation wells that were inventoried accounted for 16 percent of the 1977 pumpage from the Twin Mountains.

The Twin Mountains Formation is the most prolific of the Cretaceous aquifers in the study area with about 55 percent of the total quantity of ground water utilized for municipal and industrial purposes. The quality of water is generally not as good as from the Paluxy or Antlers. However, higher well-yields allow some sacrifice in chemical quality. Approximately 700 analyses of water samples from the Twin Mountains have been tabulated and included in Table 10 which shows the range of constituents and properties of the water from representative wells. About 22 percent of these analyses contained dissolved-solids concentrations in excess of 1,000 mg/l.

Similar to the other Cretaceous aquifers in this study, the ground water from wells drilled on the outcrop of the Twin Mountains is hard and contains high concentrations of dissolved iron. In the downdip area, about 9 percent of the samples contain dissolved iron concentrations in excess of the recommended limit of 0.3 mg/, and about 83 percent of the water is soft. The maximum allowable level for fluoride in the study area is 1.6 mg/l according to Drinking Water Standards adopted by the Texas Department of Health. Over 230 analyses contained fluoride levels exceeding 1.6 mg/l. Most of the other constituent levels were close to the maximum. Therefore, the main problems related to water quality for this aquifer are excessive fluoride and dissolved-solids concentrations. The downdip limit of fresh to slightly saline water is encountered about 60 to 75 miles (97 to 121 km) east-southeast of the outcrop in the majority of the study area (Figure 25). This distance is considerably less in the northern part of the study area where the outcrop trends eastward in the vicinity of Red River.

Since there are no concentrated areas of ground-water irrigation on the Twin Mountains outcrop, not enough chemical-quality data could be obtained to present a detailed classification of irrigation waters. Generally speaking, the Twin Mountains irrigation wells that are scattered through northeastern Hood County showed a very high sodium hazard, medium to high salinity hazard, and RSC levels classified as unsuitable for irrigation. Limited use of these wells accompanied with crop rotation and good management is necessary for continued good land productivity.

Irrigation wells, located near Brock in Parker County and completed on the Twin Mountains outcrop, were sampled and the results showed a low sodium hazard, medium salinity hazard, and zero RSC. The quality of water from 30 wells was suitable for irrigation use, but well yields limited extensive development.

Figure 29 shows the net sand thickness of fresh to slightly saline water-bearing sand in the Twin Mountains. Net sand thickness generally increases downdip in an easterly direction. Thickness increases from less than 100 feet (30 m) near the outcrop to over 400 feet (122 m) near the downdip limit of fresh to slightly saline water.

Areas for future development would have to be outside the Dallas-Fort Worth metroplex cone of depression. Even outside this influence, water levels are dropping over 10 feet (3 m) per year. There are several areas where waier quality restricts development of wells for irrigation use as previously noted and depicted on Figure 23. Wells tapping the Twin Mountains aquifer in areas downdip from the outcrop and in areas where quality is not a problem can expect a steady decline in water levels and yields.

Paluxy Formation

The Paluxy yields small to moderate amounts of fresh to slightly saline water to public supply, industrial, domestic and livestock wells in 16 of the 20 counties included in this study. The majority of the Paluxy outcrop occurs in Hood, Parker, Tarrant, and Wise Counties as illustrated on the geologic map (Figure 16) and occupies about 650 square miles (1,684 km^2).

The primary source of recharge to the Paluxy is precipitation on the outcrop. Secondary sources include recharge from streams flowing across the outcrop and surface-water seepage from lakes. The Brazos and Trinity River systems and Eagle Mountain Reservoir are a few examples. The average annual precipitation on the outcrop is about 31 inches (79 cm). Only a small fraction of the amount is available as effective recharge since there is much runoff and evapotranspiration.

Water in the outcrop area is under water-table conditions and water levels remain fairly constant with only normal seasonal fluctuations. In downdip areas, water is under artesian conditions, and is confined under hydrostatic pressure from overlying formations. The average rate of movement of water in the Paluxy amounts to less than 2 feet (0.6 m) per year in an easterly direction except in downdip areas of heavy pumpage where cones of depression have occurred and movement is towards the center of the pumped wells. Water-level measurements indicate that the present hydraulic gradient is approximately 27 feet per mile

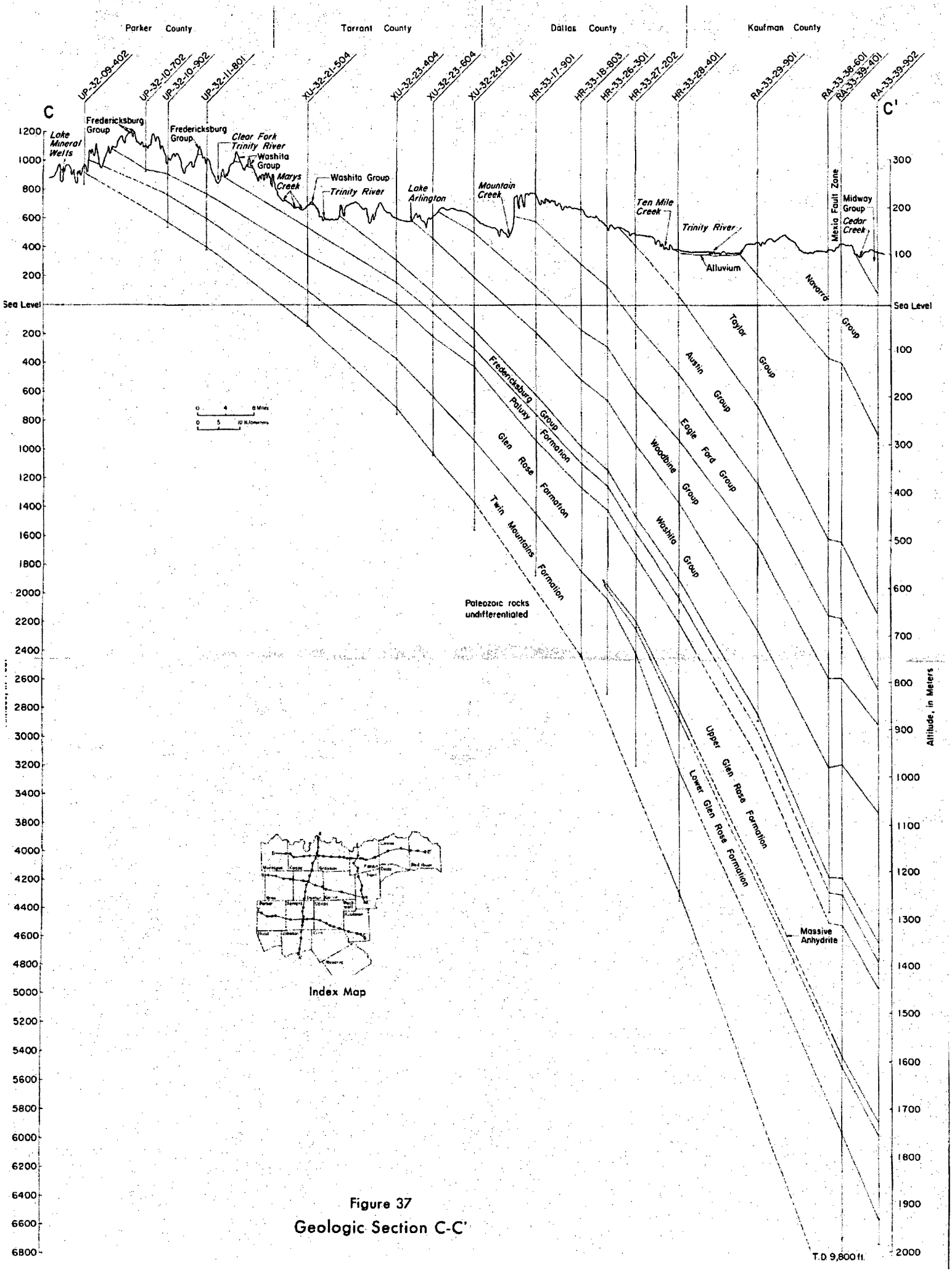


Figure 37

Geologic Section C-C'

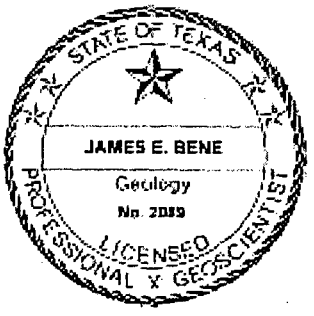
REFERENCE 19

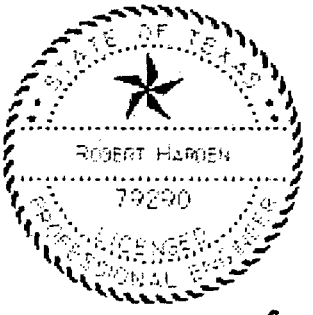
Northern Trinity / Woodbine Aquifer Groundwater Availability Model

Prepared For:
The Texas Water Development Board

Prepared By:
R.W. Harden & Associates, Inc.

With:
Freese & Nichols, Inc.
HDR Engineering, Inc.
L.B.G. Guyton Associates
The United States Geological Survey
Dr. Joe Yelderman, Jr.





The seals appearing on this document were authorized by James E. Bené, P.G. 2089 and Robert Harden, P.E. 79290 on August 31, 2004.

2.2 Geology

The Cretaceous sediments that comprise the Northern Trinity/Woodbine aquifer system extend from a small section of western Arkansas and southern Oklahoma through much of the northeastern quarter of Texas. Deposited upon a relatively flat erosional surface (paleoplain) carved into truncated, metamorphosed Paleozoic strata during the Triassic and Jurassic, these sediments form a southeastward-thickening wedge from Central Texas outcrop areas to the East Texas Basin (Nordstrom, 1982). The Trinity/Woodbine sediments were deposited throughout the Comanchean Series and the early Gulfian Series, and are subdivided (from oldest to youngest) into the Trinity, Fredericksburg, Washita, and Woodbine Groups (Hill, 1901). Trinity/Woodbine sediments were laid down in a variety of terrestrial and marine depositional environments. Because of the large degree of variability in thickness and lithology exhibited by these formations over the model extent, the geologic nomenclature describing the Trinity/Woodbine is complex, often varying with author, date, and region. In order to standardize the process of data collection and model construction, the following nomenclature was adopted for this GAM project. The Lower Trinity is defined as all formations below the Glen Rose including (from lower to upper) the Hosston/Sligo, Pearsall/Cow Creek/Hammett, and Hensell members of the Travis Peak Formation, while the Upper Trinity is defined as the Glen Rose and Paluxy Formations where defined (see Figures 2.12 and 2.13). Figures 2.14 through 2.18 illustrate the regional stratigraphic relationships of the Trinity/Woodbine units.

Extending from McLennan County at its southern edge to the Red River in the north, the Woodbine Formation was deposited in the late Cretaceous (Gulfian Series). The Woodbine is composed of sand, silt, clay, and some gravel, and ranges in thickness from less than 100 feet in the south to over 600 feet in northern downdip areas. South of McLennan County in Central Texas, where the thick sands of the Woodbine are no longer present, the Pepper Shale is equivalent to the Upper Woodbine (Adkins and Lozo, 1951). The Woodbine is divided into two members from oldest to youngest: the Dexter Member and the Lewisville Member. These members are composed chiefly of sediments deposited in fluvial, high-destructive deltaic, and shelf-strandplain depositional systems. The Ouachita Mountains in Southern Oklahoma and Arkansas served as the source of Woodbine sediments, which were subsequently deposited into the actively subsiding East Texas Basin (Oliver, 1971). The Woodbine is unconformably overlain by the Eagle Ford Group throughout most of the study area, which acts as a confining unit to the Woodbine (Yelderman, 2002). The Eagle Ford is comprised predominantly of shale with thin beds of limestone and bentonite, and increases in thickness from about 150 feet in the south to greater than 500 feet in northern Texas. As shown in Figure 2.19, the net sand content of the Woodbine is also greatest in downdip areas in

northern Texas. In this region, the sand thickness increases from less than 100 feet near the outcrop to over 400 feet near the Luling-Mexia-Talco Fault Zone (Section 4.2).

The Fredericksburg and Washita Groups separate the Paluxy from the overlying Woodbine Formation. The Fredericksburg Group is comprised of the Walnut Formation, Comanche Peak, and Edwards Formations in southern areas. In the northern portion of the model area, the carbonate facies of the Fredericksburg is generally classified as the Goodland Formation, which forms a very distinct contact on geophysical logs with the Kiamichi Clay, defined herein as the basal unit of the Washita Group. Deposited during late Comanchean times, the Washita Group is subdivided into various formations with very complex stratigraphic nomenclature, depending upon region and author. The Fredericksburg and Washita Groups consist primarily of limestone, dolomite, marl, and shale facies (Leggat, 1957), and have a combined thickness ranging from about 450 to 900 feet in the model area.

The Lower Cretaceous Paluxy Formation consists of sand, silt, and clay, deposited unconformably atop the underlying Trinity Group sediments. Separated from the Lower Trinity aquifers by the Glen Rose Formation throughout most of the southern section of the study area, the Paluxy merges with and generally becomes indistinguishable from the Hensell and Hosston in the north and northwest. The boundary with the overlying clay-rich Walnut Formation is characterized as a gradational, interfingering contact, which suggests time-equivalent deposition (Atlee, 1962). The Ouachita and Arbuckle Mountains in Oklahoma provided the source of Paluxy sediment, which was redeposited in fluvial, deltaic, and strandplain depositional environments in northeastern Texas (Caughey, 1977). The Paluxy increases in total thickness from a featheredge in the southern portion of the study area to greater than 600 feet in the north and northwest. Similarly, the net sand thickness (as derived in this study from geophysical logs) grows from just a few feet in the south to more than 250 feet in northern Texas (Figure 2.20). The sands and silts that comprise the Paluxy are composed primarily of fine-grained, friable, quartz grains, which are, in general, well sorted, poorly cemented, and crossbedded (Klemt et al., 1975).

The Glen Rose Formation lies below the Paluxy Formation throughout most of the model area. Conformable and gradational with the underlying Travis Peak Formation, the Glen Rose strata were deposited on a laterally extensive shelf area known as the Central Texas Platform. The Glen Rose is composed primarily of dense, finely crystalline limestone with varying amounts of shale, sandy-shale, and anhydrite distributed throughout the unit. The type, volume, and distribution of sediments were controlled primarily by eustatic cycles, which resulted in the alternation between classic tidal flat depositional environments during regressive stages, and deeper marine (neritic) environments during transgressive periods (Davis, 1974). The Glen Rose carbonates are present throughout most

of the study area, but pinch out in the west and northwestern portions of the model domain. In regions where the unit is defined, the thickness is variable, but averages about 500 feet throughout the study area.

The Cretaceous strata underlying the Glen Rose Formation have traditionally been designated as the Twin Mountains Formation in northern Texas and the Travis Peak Formation in Central Texas. The Travis Peak is comprised of three members: the Hosston/Sligo Member, the Pearsall/Cow Creek/Hammett Member, and the Hensell Member. In general, the assignment of Twin Mountains has been applied in regions where the contacts between the individual members are ambiguous, while the assignment to the Travis Peak Formation is made when the boundaries between subdividing members are well defined, although this is not always the case. Additional nomenclatural ambiguity results in northern sections where the definition between the Hensell and Hosston is not clear and the carbonates of the Glen Rose Formation are not distinguishable. In these areas, the sediments separating the sands of the Paluxy and the Lower Trinity are (by default) attributed in geologic nomenclature either to the Paluxy or to the Twin Mountains/Travis Peak. Where this occurs, the combined Paluxy-Twin Mountains/Travis Peak strata are referred to as the Antlers Sand.

The Hensell Member was defined by Hill (1901) and is designated as the uppermost, sandy, subdivision of the Travis Peak Formation. The lithologic makeup of the Hensell is similar to that of the Hosston, containing a large percentage of fine to coarse-grained sand interbedded with shales and, in the basal section, pebbly conglomerate lenses (Boone, 1968). Hensell sand deposits exhibit poor cementation and common cross-beds (Nordstrom, 1987). The Hensell does not generally exhibit the basinward thickening of sand deposits seen in other Trinity/Woodbine aquifer units. Instead, the sand thickness of the Hensell is relatively uniform, ranging between 50 to 100 feet throughout most of the region (Figure 2.21). Source rock for the Hensell was derived from regions located to the north and west of the study area, which were eroded and redeposited to the southeast within fluvial and deltaic depositional regimes (Hall, 1976).

The Pearsall/Cow Creek/Hammett Member separates the Hensell and Hosston/Sligo Members of the Travis Peak Formation. This composite member defines the carbonate and clay-rich clastic sediments deposited during early Comanchean times. Predominantly composed of limestone in downdip areas, the carbonate facies of the Cow Creek gradually thins and pinches out in the western (updip) portion of the study area. Where the Cow Creek limestones are not present, the shales of the Cow Creek and Hammett Members coalesce and become indistinguishable as separate units. Updip of this convergence zone, the argillaceous composite unit is defined as the Pearsall Member. The

Pearsall/Cow Creek/Hammett averages 100 to 200 feet thick, and is generally distinguishable on geophysical logs in the south, but is not clearly defined in northern portions of the study area.

The Hosston/Sligo Member of the Travis Peak Formation represents the first sequence of preserved Cretaceous deposits in the study area. Composed primarily of fossiliferous, dolomitic limestone with interbedded shale, the Sligo is the downdip, marine equivalent to the Hosston Sand (Klemt et al., 1975). Ranging in thickness from 0 to 130 feet, the Sligo is thickest in eastern, downdip areas, and grades into sandstone and shales that become indistinguishable from the Hosston west of the Waco area. In the outcrop, the Hosston Sand is interpreted to be equivalent to the Sycamore Sand (Stricklin et al., 1971) as defined by earlier researchers. This unit is composed of thin to massively bedded, fine to medium grained orthoclase-rich quartz sand interbedded with sandy clay (Boone, 1968). As illustrated in Figure 2.22, the net sand thickness of the Hosston averages about 175 feet in the model area, with a maximum of about 500 feet in downdip areas. Because the Hosston/Sligo was deposited upon valleys and ridges that existed in the pre-Cretaceous surfaces, the total thickness of deposition varies in the study region. In general, local Hosston/Sligo deposits are thicker in valley areas, while locally thinner deposits are found in areas where the underlying strata formed ridges. Within the model area as a whole, the total thickness of the Hosston sand averages about 240 feet, with deposits in downdip portions of the study area exceeding 1,500 feet in thickness.

Two major fault zones displace Trinity/Woodbine sediments: 1) the Luling-Mexia-Talco Fault Zone, and 2) the Balcones Fault Zone. These zones significantly affect the flow within the aquifer system, which in turn influences the quality and availability of Trinity/Woodbine groundwater. Sections 4.1 and 4.2 discuss the geologic history and occurrence of these features in the model area.

System	Series	Groups	Formation				Approximate Maximum Thickness	
			North		South		North	South
Tertiary	Undifferentiated							
Cretaceous	Gulfian	Navarro	Undifferentiated		Undifferentiated		800	550
		Taylor					1500	1,100
		Austin					700	600
		Eagle Ford					650	300
		Woodbine					700	200
	Comanchean	Washita	Grayson Marl		Buda, Del Rio		1,000	150
			Mainstreet, Pawpaw, Weno, Denton		Georgetown			150
			Fort Worth, Duck Creek					
			Kiamichi		Kiamichi			50
		Fredericksburg	Goodland		Edwards		250	175
					Comanche Peak			150
			Walnut Clay		Walnut Clay			200
		Trinity	Antlers	Paluxy	Paluxy		400	200
				Glen Rose	Glen Rose		1,500	1,500
				Twin Mountains	Travis Peak	Hensell	1,000	1,800
						Pearsall/ Cow Creek/ Hammett		
						Hosston/Sligo		
Paleozoic	Undifferentiated							

Source: Klemt et al., 1975; Nordstrom, 1987.

Figure 2.12 Stratigraphic Diagram

REFERENCE 20

GEOLOGIC ATLAS OF TEXAS
DALLAS SHEET

GAYLE SCOTT MEMORIAL EDITION

VIRGIL E. BARNES, Project Director

1972
Revised 1988

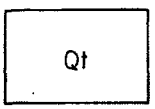
EXPLANATION

Holocene
Pleistocene
Eocene and Paleocene
Paleocene

QUATERNARY
TERTIARY

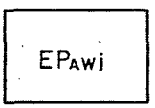
Alluvium and Quaternary deposits undivided

Alluvium, Qal, flood-plain deposits including indistinct low terrace deposits; gravel, sand, silt, silty clay, and organic matter. Quaternary deposits undivided, Qu, mostly colluvium with some alluvium and alluvial fan deposits



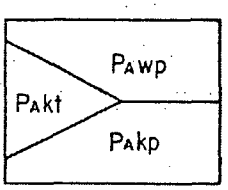
Fluviatile terrace deposits

Gravel, sand, silt, and clay; contiguous terraces of different ages separated by solid line



Wilcox Group undivided

Mostly mudstone with various amounts of sandstone, lignite, ironstone concretions, locally glauconitic in uppermost and lowermost parts. Mudstone, massive to thin bedded, interbedded with laminae of silt and very fine sand, pale brown to yellowish brown in upper part, medium to dark gray in lower part, weathers yellowish brown. Sandstone, medium to fine grained, moderately well sorted, cross-bedded, lenticular in upper part, units a few inches to 30 feet thick in lower part, light gray to pale yellowish brown and yellowish brown to moderate brown. Lignite mostly near middle of formation, seams 1–20 feet thick, brownish black. Abundant plant fossils, a few marine megafossils. Thickness 1,000–1,500 feet



Midway Group

Includes Wills Point Formation, PAwp, *Tehuacana Member of Kincaid Formation,* PAkt, *and Pisgah and Littig Members of Kincaid Formation undivided,* PAkp

Wills Point Formation, PAwp, *clay, silty, sandy, silt and sand more abundant upward, slightly glauconitic near base, 10-inch rosette limestone bed below middle, massive, poorly bedded, grades upward to mudstone and sand of Wilcox Group, light gray to dark gray; weathers medium gray to yellowish gray, topographically featureless; thickness 550± feet*

Tehuacana Member of Kincaid Formation, PAkt, *limestone, silty, slightly glauconitic, hard, white to light gray, interbedded with light gray marl, thickness up to 30 feet, outcrop discontinuous, absent south of Trinity River*

Pisgah and Littig Members of Kincaid Formation undivided, PAkp, *sand and clay. Sand, glauconitic, argillaceous, poorly sorted, medium gray to greenish gray, some hard sandstone beds near top; clay, sandy, silty, phosphatic pebbles and nodules present in lower part, medium gray to dark gray; weathers to yellow and yellowish brown soil. Thickness 150± feet*

Upper Cretaceous

Kkc

Kemp Clay and Corsicana Marl undivided

Mostly clay, calcareous, locally silty, compact, thinly laminated, subconchoidal fracture, medium dark gray; weathers light gray and fissile; some interbeds of fine-grained sandstone near base; marine megafossils; thickness 300–400 feet

Kns

Nacatoch Sand

Quartz sand, fine grained, poorly sorted, friable, silty, glauconitic, local lenses of silty clay, compact, light gray to greenish gray; thin calcareous sandstone beds in upper and lower parts; marine megafossils; thickness 250± feet

Knm | Kne / Kmb

Neylandville Formation and Marlbrook Marl

Neylandville Formation and Marlbrook Marl undivided, Knm, *south of Rockwall County; where subdivided includes from top down Neylandville Formation,* Kne, *and Marlbrook Marl,* Kmb

Neylandville Formation, Kne, *clay, calcareous, silty, sandy, sand content increases upward, medium gray; weathers light gray, forms irregular topography; thickness 125± feet*

Marlbrook Marl ("upper Taylor marl"), Kmb, *clay, calcareous, variable amount of silt and glauconite, silt content increases upward, disseminated pyrite, locally phosphate nodules and phosphatized marine megafossils, blocky, conchoidal fracture, light to dark gray; weathers light gray with poor fissility; marine megafossils; thickness 350± feet*

Kpg

Pecan Gap Chalk (?)

Marl and clay, very sandy and silty, medium gray; thickness up to 40 feet, feathers out southward northeast of Rockwall

Kwc

Wolfe City Formation

Marl, sand, sandstone, and mudstone. In Navarro County, marl, sandy and silty, interbedded with thin sandstone beds and massive sandstone; medium gray. Grades northward into an upper fine-grained sand and silt unit, calcareous, medium yellowish gray; and a lower mudstone unit, calcareous, dark gray, weathers medium gray. Marine megafossils. Thickness 75–300 feet, thins northward

CRETACEOUS

Upper Cretaceous

Lower Cretaceous

CRETACEOUS

Ko

Ozan Formation ("lower Taylor marl")

Clay, calcareous, silt and sand content increases upward, montmorillonitic, blocky, conchoidal fracture, medium gray; some glauconite, phosphate pellets, hematite nodules, and pyrite nodules; some very thin limestone lenses locally in lower part; weathers light brownish gray with poor fissility, grades upward to Wolfe City Formation; marine megafossils; thickness 500± feet

Kau

Austin Chalk

Upper and lower parts, chalk, mostly microgranular calcite, massive, some interbeds and partings of calcareous clay, thin bentonitic beds locally in lower part, lower part forms westward-facing scarp; light gray. Middle part, mostly thin-bedded marl with interbeds of massive chalk, locally burrowed, marcasite-pyrite nodules common, light gray. Weathers white, marine megafossils scarce, thickness 300–500 feet, thins southward

Kef

Eagle Ford Group undivided

North of Hill County, shale, sandstone, and limestone; shale, bituminous, selenitic, with calcareous concretions and large septaria; sandstone and sandy limestone in upper and middle parts, platy, burrowed, medium to dark gray; in lower part bentonitic; hard limestone bed marks base in Ellis and Johnson Counties; locally forms low cuesta; thickness 200–300 feet

Kwb

Woodbine Formation

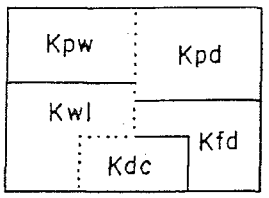
Sandstone, some clay and shale. Upper part, mostly sandtone, fine grained, well sorted, in part tuffaceous, ripple marked, large scale cross-bedding, reddish brown; near top some sandstone with large discoid concretions, medium to course grained, friable; some shale, jarositic, gray, fissile; some marine megafossils, oyster reefs locally. Middle part, mostly sandstone, fine grained, cross-bedded; some interbeds of clay, carbonaceous, in part sandy, gray to brown. Lower part, interbedded sandstone and clay; sandstone, fine grained, very thinly bedded to massive, some beds of ironstone and ironstone conglomerate, white, red, brown; clay, sandy, gray to brown; channeled locally. Thickness 175–250 feet, thickens northward

Kgm

Grayson Marl and Main Street Limestone undivided

Mostly Grayson Marl, *mostly calcareous clay and marl, blocky, yellowish gray and medium gray; some 0.25–1.0-foot limestone beds in upper one-third, very fine grained, fossiliferous; weathers yellowish brown, forms gentle slope; thickness 60–100 feet, thins northward*

Main Street Limestone, *medium grained, chalky, some 6–8-foot units of calcareous shale, thin bedded to massive, distinctly bedded to wavy bedded and nodular, yellowish gray; weathers light gray to white; thickness 20–35 feet, thins northward*



Pawpaw Formation, Weno Limestone, Denton Clay, Fort Worth Limestone, and Duck Creek Formation

Pawpaw Formation and upper limestone unit of Weno Limestone undivided, Kpw, *south of Fort Worth area;* Pawpaw Formation, Weno Limestone, and Denton Clay undivided, Kpd, *in Fort Worth area and northward;* middle shale and lower limestone units of Weno Limestone, Denton Clay, Fort Worth Limestone, and Duck Creek Formation undivided, Kwl, *south of Fort Worth area;* Fort Worth Limestone and Duck Creek Formation undivided, Kfd, *in Fort Worth area and northward; and* Duck Creek Formation, Kdc, *mapped separately in Parker County and western Tarrant County*

Pawpaw Formation, *claystone, mudstone, and sandstone. Claystone and mudstone, massive, slightly selenitic. Sandstone, fine to very fine grained, platy, ripple cross-laminations, light olive gray to medium gray. Forms grass-covered slopes. Marine megafossils. Thickness 10–25 feet, thins southward*

Weno Limestone, *consists of upper limestone, middle alternating clay and limestone, and lower limestone units. Upper limestone, aphanitic, in part bioclastic, soft and chalky to hard and compact, massive, light gray and yellowish gray; weathers gray and yellowish brown, forms a topographic bench; marine megafossils; thickness 2–20 feet, thins northward. Middle unit:In Tarrant County—mostly calcareous clay, massive, some lenses of sand-size shell debris, olive brown to olive gray; marine megafossils are oysters and molds of small pelecypods. In southwestern Johnson County—alternating limestone and clay; limestone, aphanitic, bioclastic, in part burrowed, some sparry bioclastic limestone, beds pinch and swell, 0.1–1.0 foot thick, medium gray, weathers yellowish brown; clay, calcareous, medium to dark gray, weathers yellowish gray and yellowish brown, fossils include pelecypods, ammonites, echinoids, vertebrate bones, and lignitized wood; thickness 15–45 feet, thins southward. Lower limestone, aphanitic, in part sandy, fossiliferous, burrowed to south, massive, progressively more resistant southward, forming scarp, light gray, medium gray where sandy, weathers yellowish brown, thickness 1–5 feet, thins northward. Thickness from about 60 feet in Tarrant County to about 25 feet in northern Hill County*

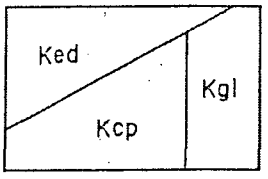
Denton Clay, *alternating clay, marl, and limestone, total limestone in unit remains about constant as amount of clay and marl varies. Clay, calcareous, considerable shell debris, locally burrowed, a few irregular calcareous concretions, units 1–3 feet thick, marine megafossils are* Anomia, Gryphaea, *and pelecypod molds. Marl, ranges from calcareous clay to aphanitic argillaceous limestone, soft, yellowish brown, weathers dusky brown. Limestone aphanitic,* Gryphaea*-bearing beds 0.1–0.6 foot thick, locally pinch and swell, dark gray, weathers dusky brown; marine megafossils are* Gryphaea, Pecten, *and* Anomia. *Thickness 6–25 feet, thins southward*

Fort Worth Limestone, *limestone and clay. Limestone, aphanitic to biosparite, burrowed, beds 0.2–2 feet becoming thicker and more massive southward, light to medium gray; weathers yellowish brown; marine megafossils are* Pecten, *oysters, echinoids, and ammonites. Clay, calcareous, in units 0.1–5 feet thick, medium gray to yellowish brown; weathers yellowish brown, forms low rolling hills. Thickness 25–35 feet*

Duck Creek Formation, Kdc, *limestone, aphanitic, in part bioclastic, locally burrowed, pyrite nodules up to 0.2 foot, beds 0.2–2 feet thick, pinch and swell, medium gray to yellowish gray; weathers dark gray with yellowish-brown patches, locally forms topographic benches; marine megafossils are* Gryphaea *and ammonites; thickness 30–100 feet, thins southward*

Kiamichi Formation

Clay and limestone in alternating units 0.1–5 feet thick; some sandstone. Clay, calcareous, olive brown, weathers yellowish brown, constitutes about two-thirds of formation. Limestone mostly aphanitic and bioclastic, locally burrowed, medium gray to yellowish gray; weathers yellowish brown. Sandstone, fine grained, moderately well sorted, calcareous, burrowed, beds 0.1–0.2 foot thick, medium gray; weathers yellowish brown. Marine megafossils are Gryphaea; *some* Pecten *in sandstone. Thickness 20–50 feet, thins southward*

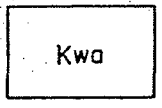


Edwards Limestone, Comanche Peak Limestone, and Goodland Limestone

Edwards Limestone, Ked, *in thicker sections consists of an upper scarp-forming rudistid facies, a middle aphanitic to biosparite fossiliferous limestone, and a lower bioclast-packed aphanitic to sparry limestone with individual corals, light gray to yellowish gray; weathers various shades of gray with moderate brown patches; thickness up to 40 feet, gradually merges with Comanche Peak Limestone or Goodland Limestone in the vicinity of the northern Hood County line*

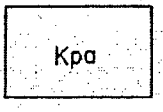
Comanche Peak Limestone, Kcp, *limestone and some clay. Limestone mostly aphanitic, bioclastic to fossiliferous, soft, a few harder* Gryphaea-*bearing beds about 25 feet above base form benches, light to medium gray; weathers various shades of gray, locally mottled yellowish brown; marine megafossils are gastropods, ammonites, echinoids,* Pecten, Lima, Gryphaea, *and* Exogyra texana. *Clay, calcareous, intergradational with nodular limestone, beds 1–5 feet thick, medium to dark gray, weathers yellowish brown, fossiliferous. Thickness 90± feet*

Goodland Limestone, Kgl, *intergradational laterally with Comanche Peak Limestone and differs from it chiefly in that the Goodland is more coarsely nodular, contains fewer and thinner clay beds, and massive resistant limestone beds are more numerous; upper 5 feet, massive, bioclast-packed aphanitic limestone and limestone composed of oolites in sparry calcite; thickness 90± feet*



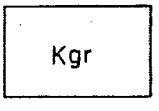
Walnut Clay

Clay and limestone about equally abundant. Limestone, aphanitic; in part bioclastic, Gryphaea-*bearing, beds 0.1–1 foot thick; in part nodular, grades laterally into either resistant, bench-forming,* Gryphaea-*bearing limestone or calcareous clay; medium to dark gray, weathers yellowish brown. Clay, fossiliferous, calcareous, olive brown, weathers yellowish brown. Thickness 30± feet*



Paluxy Formation

Sandstone, mudstone, and limestone. Sandstone, fine to very fine grained, friable to calcite cemented, cross-beds common, in part massive, locally burrowed, light gray to greenish gray; weathers yellowish brown to dusky brown. Mudstone, sandy, massive, locally burrowed, greenish gray, olive green, and medium gray; weathers yellowish brown and red brown. Limestone locally in upper 40–50 feet, sandy, fossiliferous, beds 0.5–2 feet thick, yellowish gray; weathers mottled dark gray and yellowish brown. Thickness 95–105 feet



Glen Rose Formation

Limestone, alternating with units composed of variable amounts of clay, marl, and sand. Limestone, distinctly bedded, in part with variable amounts of clay, silt, and sand, soft to hard, various shades of brownish yellow and gray. Gradational to Paluxy Formation above and Twin Mountains Formation below, bench-forming beds included in the Glen Rose Formation. Thickness 40–200 feet, thins northward

Lower Cretaceous

Missouri Series

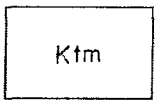
Des Moines Series

?

Strawn Group

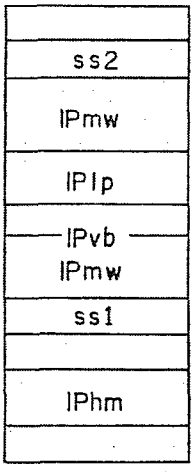
CRETACEOUS

PENNSYLVANIAN



Twin Mountains Formation

Upper part claystone, middle part sandstone above claystone, lower part mostly sandstone, some claystone and conglomerate. Sandstone, fine to medium grained in middle part, medium to coarse grained in lower part, sorting best in middle part, friable, locally large scale cross-bedding, mostly light gray, some light brown near middle. Claystone, silty, mostly gray, locally in upper part green, yellow, red. Conglomerate, pebbles of chert and quartz, argillaceous, sandy, gray, brown. Thickness about 150 feet



Mineral Wells Formation

Mineral Wells Formation, IPmw, *shale, sandstone, conglomerate, and limestone;* sandstone, ss2, Lake Pinto Sandstone, IPlp, Village Bend Limestone, IPvb, sandstone, ss1, *and* Hog Mountain Sandstone, IPhm. *mapped separately. Shale, calcareous, locally contains sandstone and a few thin limestone beds, gray to black, a few plant fossils*

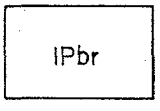
Sandstone, ss2, *fine to coarse grained, thin bedded to massive, brown, thickness 10 feet, feathers out southwestward on Abilene Sheet*

Lake Pinto Sandstone, IPlp, *medium to fine grained, locally conglomeratic, thick bedded, brown, thickness 20–40 feet*

Village Bend Limestone, IPvb, *fine grained, locally sandy, thick bedded, yellow gray, weathers to small blocks, marine megafossils, forms laterally discontinuous lentils, thickness up to 3 feet*

Sandstone, ss1, *locally conglomeratic, thickness about 30–40 feet, feathers out southwestward near Mineral Wells on Abilene Sheet*

Hog Mountain Sandstone, IPhm, *fine to medium grained, thick bedded to flaggy, brown, thickness about 25 feet. Thickness of exposed part of Mineral Wells Formation 400–500 feet, overlapping Cretaceous rocks cover upper third and other portions of formation including Turkey Creek Sandstone and Dog Bend Limestone, which are exposed on the Abilene Sheet immediately to the west*



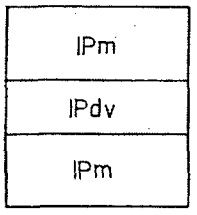
Brazos River Formation

Sandstone, conglomerate, and mudstone; sandstone, coarse grained, ferruginous, cross-bedded, thick bedded to massive, reddish brown; mudstone, silty, gray, local lenses; conglomerate, angular pebbles of chert up to 1.5 inches in size, some clay ironstone, variegated, ferruginous cement common; thickness 100 feet

Des Moines Series

Strawn Group

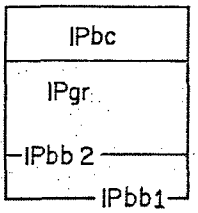
PENNSYLVANIAN



Mingus Formation

Mingus Formation, IPm, *shale and sandstone;* Dobbs Valley Sandstone, IPdv, *mapped separately. Shale, sandy, poorly bedded, gray to buff*

Dobbs Valley Sandstone, IPdv, *medium grained, locally calcareous, commonly massive, reddish brown, some interbedded sandy shale, thickness about 45 feet. Thickness of exposed part of* Mingus Formation *about 200 feet; overlapping Cretaceous rocks cover lower part of formation including Santo Limestone; the Goen Limestone feathers out above the Dobbs Valley Sandstone a few miles to the west before reaching the Dallas Sheet*

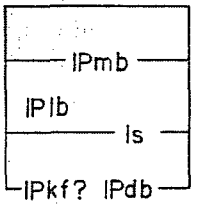


Grindstone Creek Formation

Grindstone Creek Formation, IPgr, *shale, sandstone, and limestone;* Buck Creek Sandstone, IPbc, *and* Brannon Bridge Limestones, IPbb2 *and* IPbb1, *mapped separately. Shale, in part sandy, locally contains thin coal beds and sandstone lentils, gray*

Buck Creek Sandstone, IPbc, *coarse grained, massive, reddish brown, forms prominent scarp, thickness about 30 feet*

Brannon Bridge Limestones, IPbb2 *and* IPbb1, *fine grained, some interbedded shale, dark chert lenses in* IPbb2, *bedding uneven, indistinct to medium, gray, units up to about 15 feet thick, form distinct scarps and broad dip slopes; about 10 feet of shale separates the two limestone units. Thickness of exposed part of* Grindstone Creek Formation *about 225 feet; overlapping Cretaceous rocks cover upper part of formation; a third and higher Brannon Bridge Limestone feathers out a few miles to the west within the Abilene Sheet*



Lazy Bend Formation

Lazy Bend Formation, IPlb, *shale, sandstone, and limestone;* Meek Bend Limestone, IPmb, unnamed limestone, ls, Dennis Bridge Limestone, IPdbr, *and* Kickapoo Falls Limestone, IPkf, *mapped separately. Shale, in part sandy, in part silty, local coal beds, and unmapped limestone lentils*

Meek Bend Limestone, IPmb, *fine grained, bedding thin flaggy to massive, gray, marine megafossils; thickness about 12 feet, exposed only in small creek west of Brazos River, well exposed on Abilene Sheet to the west*

Limestone, ls, *fine grained, locally grades into sandstone, medium to thin bedded, gray to brown, marine megafossils; thickness up to 6 feet, outcrop discontinuous and poorly exposed*

Dennis Bridge Limestone, IPdb, *fine grained, massive at base to thin bedded at top, gray to light brown, marine megafossils; thickness 10 feet, exposed at south end of Dennis Bridge over Brazos River and vicinity, approximately equivalent to Kickapoo Falls Limestone*

Kickapoo Falls Limestone, IPkf, *fine grained, thick to medium bedded, upper part nodular, light gray, mottled dark gray, marine megafossils and algae; thickness up to 12 feet, approximately equivalent to Dennis Bridge Limestone, outcrop confined to Kickapoo Creek inlier. Thickness of* Lazy Bend Formation *275 feet*

Des Moines Series

Strawn Group

PENNSYLVANIAN

IPu

Unnamed Pennsylvanian rocks

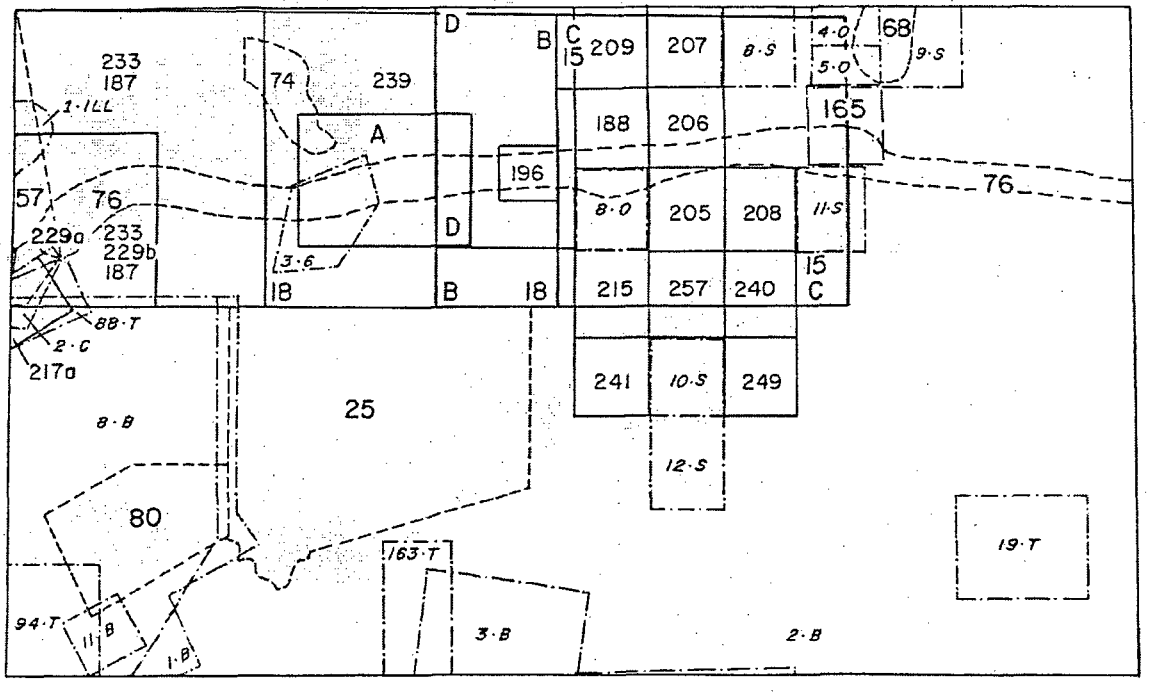
Shale, limestone, and sandstone. Shale, locally sandy and silty, some thin sandstone beds and impure limestone lentils, gray to deep dull red; thickness exposed beneath Cretaceous overlap about 75 feet, comprises rocks cropping out beneath Dennis Bridge and Kickapoo Falls Limestones, best exposed along Kickapoo Creek, downstream from Kickapoo Falls crossing

Geologic mapping by Shell Oil Company, Humble Oil and Refining Company, Dallas Geological Society, Fort Worth Geological Society, Shell Development Company, J. H. McGowen, C. V. Proctor, Jr., W. T. Haenggi, D. F. Reaser, and sources shown on the Index of Geologic Mapping. Paleozoic mapping by L. F. Brown, Jr., and J. L. Goodson. J. H. McGowen, C. V. Proctor, Jr., W. T. Haenggi, and D. F. Reaser compiled the geologic mapping on high altitude aerial photographs, compiled unmapped areas photogeologically, and field checked all mapping. V. E. Barnes remapped, but did not field check, Quaternary deposits of Dallas and Tarrant Counties using U.S. Geological Survey 7.5-minute topographic quadrangles. Geologic mapping reviewed by Geologic Atlas Project Committees of the Dallas Geological Society, R. J. Cordell (Sun Oil Company), Chairman, E. G. Wermund (Mobil Research and Development Corporation), and R. L. Laury (Southern Methodist University); and the Fort Worth Geological Society, W. J. Nolte (Independent Geologist), Chairman, Leo Hendricks (Texas Christian University), and Edward Heuer. Geology scribed by J. W. Macon and Barbara Hartmann.

Extensive revision in the southeastern part of the Dallas Sheet relied on mapping furnished by Humble Oil and Refining Company. Where needed, V. E. Barnes remapped the Quaternary deposits of the sheet using U.S. Geological Survey 7.5-minute topographic quadrangles. The revision of the Dallas Sheet was scribed by John T. Ames.

INDEX OF GEOLOGIC MAPPING

Numbers in outlined areas refer to items in bibliography in "Index to Areal Geologic Maps in Texas, 1891-1961," by T. E. Brown (1963), Bureau of Economic Geology, University of Texas, Austin. For area A, see O. D. Weaver, J. A. Rogers, W. F. Buckthal, A. E. Kurie, E. R. Leggat, Dan McGill, and Ray Rall, Geologic map of central Tarrant County, Fort Worth Geological Society; for area B, see C. F. Dodge, Geologic map of the eastern half of Tarrant County, Texas (manuscript map, 1966); for area C, see G. H. Norton (1965), Geologic map of Dallas County, Dallas Geological Society; for area D, see Leo Hendricks (1976), Geology of Midcities area, Tarrant, Dallas, and Denton Counties, Texas: The University of Texas at Austin, Bureau of Economic Geology Geologic Quadrangle Map 42; for area E, see P. N. Wiggins, III (1954), Geology of Ham Gossett Oil Field, Kaufman County, Texas: American Association of Petroleum Geologists Bulletin, v. 38, p. 306-318.



REFERENCE 21

2000 Census Summary File 1 Report
Detailed Age,Sex,Households,Families,and Housing (SF1) Report
4 Mile Radius

GENERAL CHARACTERISTICS

	Total	Percent
Total Population	11,309	100.0%
Male	5,744	50.8%
Female	5,565	49.2%
Median Age (years)	N/A	

	Total
Total Housing Units	4,458
Households	4,009
Household size	2.82
Occupancy Rate	89.9%
Group Quarters Population	0

POPULATION BY RACE AND HISPANIC ORIGIN

			Hispanic		Non-Hispanic	
Universe: Persons	Total	Percent	Total	Percent	Total	Percent
Total	11,309	100.0%	488	4.3%	10,821	95.7%
White alone	10,842	95.9%	264	2.3%	10,578	93.5%
Black/African American Alone	45	0.4%	1	0.0%	44	0.4%
American Indian And Alaska Native Alone	93	0.8%	15	0.1%	78	0.7%
Asian Alone	34	0.3%	0	0.0%	34	0.3%
Native Hawaiian and Other Pacific Islander alone	0	0.0%	0	0.0%	0	0.0%
Some other race alone	191	1.7%	182	1.6%	9	0.1%
Two or more races	104	0.9%	26	0.2%	78	0.7%

AGE

	Total	Percent
Under 5 years	636	5.6%
5 to 9 years	947	8.4%
10 to 14 years	1,022	9.0%
15 to 19 years	875	7.7%
20 to 24 years	383	3.4%
25 to 34 years	899	7.9%
35 to 44 years	2,138	18.9%
45 to 54 years	2,040	18.0%
55 to 59 years	711	6.3%
60 to 64 years	508	4.5%
65 to 74 years	793	7.0%
75 to 84 years	300	2.7%
85 years and over	57	0.5%
18 years and over	8,103	71.7%
Male	4,056	35.9%
Female	4,047	35.8%
21 years and over	7,726	68.3%
62 years and over	1,439	12.7%
65 years and over	1,150	10.2%
Male	576	5.1%
Female	574	5.1%

HOUSING OCCUPANCY

Total Housing Units	4,458	100%
Vacant housing units	449	10.1%
For seasonal recreational or occasional use	229	5.1%

HOUSE TENURE

Occupied housing units	4,009	100%
Owner-occupied housing units	3,610	90.0%

HOUSEHOLDS BY TYPE

	Total	Percent
Total households	4,009	100%
Family households (families)	3,382	84.4%
with own children under 18 years	1,599	39.9%
Married-couple family	3,023	75.4%
with own children under 18 years	1,373	34.2%
Female householder, no husband present	226	5.6%
with own children under 18 years	143	3.6%
Nonfamily households	94	2.3%
1 person households	533	13.3%
Householder 65 years and over	690	17.2%
Households with individuals under 18 years	1,709	42.6%
Households with individuals 65 years and over	796	19.9%
Average family size	N/A	

RELATIONSHIP

Total population	11,309	100.0%
In households	11,309	100.0%
In family households	10,567	93.4%
Householder	3,382	29.9%
Spouse	3,023	26.7%
Child	3,681	32.5%
Own child under 18 years	3,005	26.6%
Grandchild	181	1.6%
Brother or sister	29	0.3%
Parent	68	0.6%
Other relatives	88	0.8%
Under 18 years	159	1.4%
Nonrelative	115	1.0%
Unmarried partner (tract and above)		
In nonfamily households	742	6.6%
Nonrelatives (tract and above)		

Renter-occupied housing units	399	10.0%	Unmarried partner (tract and above)		
			In Group Quarters	0	0.0%
			Noninstitutionalized population	0	0.0%
			Institutionalized population	0	0.0%

For information on confidentiality protection, nonsampling error, and definitions, see **http://www.census.gov/prod/www/abs/decenial.html**
Source: U.S. Census Bureau, Compiled by the North Central Texas Council of Governments - **http://census.dfwinfo.com**

REFERENCE 22

www.nctcog.org June 2008

North Central Texas Council of Governments
Research and Information Services

Summary of Regional Population Estimates

North Central Texas has added **131,000** persons during 2007 for a January 1, 2008 total population of **6,538,850**. This marks the twelfth consecutive year to add over 100,000 persons. A decrease in growth during 2007 can be explained by a slow down in new single-family completions.

Over 40 percent of the region's growth in 2007 was located in five cities. **Dallas (1,300,350)** led the region by adding 19,850 new residents. **Fort Worth** followed, adding 16,000 new residents, bringing the city's total population to **702,850** persons. **McKinney (118,200) added 6,200 persons. Frisco** pushed its total population to **97,600** by adding 5,500 residents. **Plano (260,900)** rounded out the top five in absolute growth by adding 5,200 persons.

Some smaller suburbs continued to see small to moderate changes in last year's population, especially in Collin, Denton and Rockwall counties. **Lavon (1,950)** led all cities with a 26% increase in population adding 400 residents. **Fate (4,800)**, added 400 people, growing by 14%. **Princeton (5,750)** grew by 13%, adding 650 residents. **Fairview (8,600)** added 950 persons last year, a 12% change.

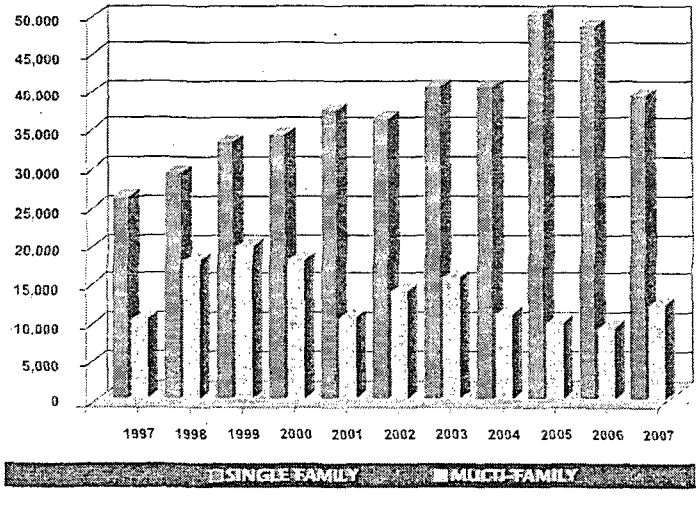
Finally, the cities of **Melissa (3,900)**, **Anna (7,800)**, **Shady Shores (2,400)**, **Sunnyvale (4,300)**, **Royse City (10,100), and Forney (12,400)** each experienced a greater than 8% increase in their population growth.

Collin, Dallas, Denton, and **Tarrant counties** captured 81% of all the regional growth, adding 106,500 persons. **Tarrant County** led all counties by adding 35,100 persons, pushing the county's total population to **1,780,150** residents. **Dallas County** closely followed by adding 34,150 persons for a 2008 population of **2,451,800**. **Collin** and **Denton counties** each added over 10,000 persons last year and now total **748,050** and **614,650** persons, respectively. Outside of the four urban counties, the unincorporated areas of **Ellis**, **Johnson**, **Kaufman**, **Parker,** and **Wise** counties have shown significant growth by adding nearly 9,000 persons in the past year.

In 2007, single-family home construction slowed significantly across the region. Nearly 39,000 new single-family units were completed, which is 9,000 fewer than in 2006. On the other hand, the region saw a sizeable increase in new multi-family units in 2007. Close to 11,600 multi-family units were added, up from 8,300 in 2006.

Compared to previous years there was a high number of vacant single-family units at the end of 2007, which was reflected in a lower single-family occupancy rate for some cities. On the other hand, multi-family occupancy rates increased region-wide. As long as the region continues to experience job growth, the vacant single-family units are likely to become occupied, and new single-family construction may once again pick up, however at a slightly lower pace than in previous years. Multi-family construction should continue at a pace comparable to the current rate.

HOUSING UNIT COMPLETIONS



	Final Census 4/1/70	Final Census 4/1/80	Final Census 4/1/90	Final Census 4/1/00	Estimated Population 1/1/07	Estimated Population 1/1/08	Growth Rate 2007-2008
Collin County	**66,920**	**144,576**	**264,036**	**491,675**	**724,900**	**748,050**	**3.19%**
Allen*	1,940	8,314	19,315	43,554	76,600	78,850	2.94%
Anna	736	855	904	1,225	7,100	7,800	9.86%
Celina	1,272	1,520	1,737	1,861	4,650	4,850	4.30%
Fairview	463	893	1,554	2,644	7,650	8,600	12.42%
Farmersville	2,311	2,360	2,640	3,118	3,350	3,350	0.00%
Frisco	1,845	3,499	6,138	33,714	92,100	97,600	5.97%
Lavon	NI	NI	303	387	1,550	1,950	25.81%
Lowry Crossing*	NI	443	865	1,229	1,350	1,350	0.00%
Lucas	540	1,370	2,205	2,680	5,100	5,150	0.98%
McKinney	15,193	16,256	21,283	54,369	112,000	118,200	5.54%
Melissa	NI	604	557	1,350	3,500	3,900	11.43%
Murphy	261	1,150	1,547	3,099	12,450	12,900	3.61%
Parker	367	1,096	1,213	1,379	3,300	3,350	1.52%
Plano	17,872	72,331	127,885	222,030	255,700	260,900	2.03%
Princeton	1,105	3,408	2,448	3,477	5,100	5,750	12.75%
Prosper	501	675	1,018	2,097	6,050	6,350	4.96%
Wylie	2,675	3,152	8,716	15,132	35,400	37,000	4.52%
Remainder of Collin County	17,049	18,207	27,390	36,382	50,300	52,000	3.38%
Split Cities**	2,790	8,441	36,318	61,738	41,650	38,200	-8.28%
Dallas County	**1,327,696**	**1,556,419**	**1,852,810**	**2,218,899**	**2,417,650**	**2,451,800**	**1.41%**
Addison	588	5,553	8,783	14,166	15,250	15,300	0.33%
Balch Springs*	10,464	13,746	17,406	19,375	19,600	19,600	0.00%
Cedar Hill	2,610	6,849	19,986	32,093	43,950	44,900	2.16%
Cockrell Hill*	3,515	3,262	3,746	4,443	4,400	4,450	1.14%
Coppell	1,728	3,826	16,881	35,958	39,350	39,550	0.51%
Dallas	844,401	904,078	1,007,618	1,188,580	1,280,500	1,300,350	1.55%
DeSoto	6,617	15,536	30,544	37,646	47,800	48,100	1.05%
Duncanville	14,105	27,781	35,008	36,081	38,000	38,400	1.05%
Farmers Branch	27,492	24,863	24,250	27,508	28,500	28,750	0.88%
Garland	81,437	138,857	180,635	215,768	224,750	228,450	1.65%
Glenn Heights	257	1,033	4,564	7,224	11,450	11,650	1.75%
Grand Prairie	50,904	71,462	99,606	127,427	161,550	166,650	3.16%
Highland Park	10,133	8,909	8,739	8,842	8,600	8,600	0.00%
Hutchins*	1,715	2,837	2,719	2,805	3,000	3,050	1.67%
Irving	97,260	109,943	155,037	191,615	205,600	210,150	2.21%
Lancaster	10,522	14,807	22,117	25,894	35,050	35,800	2.14%
Mesquite	55,131	67,053	101,484	124,523	136,750	137,550	0.59%
Richardson	48,405	72,496	74,840	91,802	97,700	97,450	-0.26%
Rowlett	2,243	7,522	23,260	44,503	53,750	54,150	0.74%
Sachse	777	1,640	5,346	9,751	17,650	18,050	2.27%
Seagoville	4,390	7,304	8,969	10,823	13,250	13,300	0.38%
Sunnyvale	995	1,404	2,228	2,693	3,950	4,300	8.86%
University Park	23,498	22,254	22,259	23,324	23,150	22,850	-1.30%
Wilmer*	1,922	2,367	2,479	3,393	3,100	3,150	1.61%
Remainder of Dallas County	18,941	9,181	6,197	8,259	9,150	9,250	1.09%
Split Cities**	7,641	11,854	-31,893	-75,597	-107,950	-112,000	3.75%
Denton County	**75,633**	**143,126**	**273,775**	**432,976**	**600,600**	**614,650**	**2.34%**
Argyle	443	1,111	1,575	2,365	3,100	3,250	4.84%
Aubrey	731	948	1,138	1,500	2,350	2,500	6.38%
Bartonville	NI	441	849	1,093	1,350	1,350	0.00%
Carrollton	13,855	40,595	82,169	109,576	120,150	120,550	0.33%
Copper Canyon	NI	465	978	1,216	1,350	1,350	0.00%
Corinth	461	1,264	3,944	11,325	19,450	19,650	1.03%
Denton	39,874	48,063	66,270	80,537	105,550	106,050	0.47%
Double Oak	NI	836	1,664	2,179	2,500	2,550	2.00%
Flower Mound	1,685	4,402	15,527	50,702	62,350	62,450	0.16%
Hickory Creek*	218	1,422	1,893	2,078	3,700	3,750	1.35%
Highland Village	516	3,246	7,027	12,173	14,650	15,100	3.07%
Justin	741	920	1,234	1,891	3,050	3,100	1.64%
Krum	454	917	1,542	1,979	3,550	3,800	7.04%
Lake Dallas	1,431	3,177	3,656	6,166	6,850	7,000	2.19%
Lewisville	9,264	24,273	46,521	77,737	91,550	92,850	1.42%
Little Elm	363	926	1,255	3,646	21,800	22,650	3.90%
Northlake*	NI	NI	250	921	1,450	1,450	0.00%
Oak Point	NI	387	645	1,747	2,450	2,500	2.04%
Pilot Point	1,663	2,211	2,538	3,538	3,950	4,000	1.27%
Roanoke	817	910	1,616	2,810	5,700	6,150	7.89%
Sanger	1,603	2,754	3,514	4,534	6,700	6,700	0.00%
Shady Shores	543	813	1,045	1,461	2,200	2,400	9.09%
The Colony	NI	11,586	22,113	26,531	39,300	39,850	1.40%
Trophy Club	NI	NI	3,922	6,350	7,450	7,500	0.67%
Remainder of Denton County	12,826	19,042	26,578	40,226	54,300	56,800	4.60%
Split Cities**	-11,855	-27,583	-25,688	-21,305	13,800	19,350	40.22%
Ellis County	**46,638**	**59,743**	**85,167**	**111,360**	**144,500**	**147,850**	**2.32%**
Ennis	11,046	12,110	13,869	16,045	18,700	18,900	1.07%
Ferris*	2,180	2,228	2,212	2,175	2,250	2,350	4.44%
Italy	1,309	1,306	1,699	1,993	2,150	2,150	0.00%
Midlothian	2,322	3,219	5,040	7,480	13,750	14,550	5.82%
Oak Leaf	NI	NI	984	1,209	1,550	1,550	0.00%
Ovilla	339	1,067	2,027	3,405	3,800	3,850	1.32%
Palmer	601	1,187	1,659	1,774	1,950	1,950	0.00%
Red Oak	767	1,882	3,124	4,301	9,000	9,350	3.89%
Waxahachie	13,452	14,624	17,984	21,426	26,000	26,300	1.07%
Remainder of Ellis County	14,431	21,926	35,857	49,973	60,650	62,100	2.39%
Split Cities**	191	194	712	1,579	2,700	2,800	3.70%

	Final Census 4/1/70	Final Census 4/1/80	Final Census 4/1/90	Final Census 4/1/00	Estimated Population 1/1/07	Estimated Population 1/1/08	Growth Rate 2007-2008
Erath County	**18,141**	**22,560**	**27,991**	**33,001**	**38,100**	**38,550**	**1.18%**
Dublin	2,810	2,723	3,190	3,754	4,000	4,000	0.00%
Stephenville	9,277	11,861	13,502	14,921	17,050	17,250	1.17%
Remainder of Erath County	6,054	7,956	11,299	14,326	17,050	17,300	1.47%
Hood County	**6,368**	**17,714**	**28,981**	**41,100**	**53,600**	**54,900**	**2.43%**
DeCordova Bend*	NI	NI	NI	NI	4,000	4,000	0.00%
Granbury	2,473	3,332	4,045	5,718	7,400	7,600	2.70%
Remainder of Hood County	3,895	14,382	24,936	35,382	42,200	43,300	2.61%
Hunt County	**47,948**	**55,248**	**64,343**	**76,596**	**90,250**	**91,600**	**1.50%**
Caddo Mills	935	1,060	1,068	1,149	1,200	1,200	0.00%
Commerce	9,534	8,136	6,825	7,742	9,600	9,650	0.52%
Greenville	22,043	22,161	23,071	24,117	26,250	26,600	0.95%
Quinlan	844	1,002	1,360	1,370	1,400	1,400	0.00%
West Tawakoni	465	840	932	1,462	1,750	1,750	0.00%
Wolfe City*	1,433	1,594	1,505	1,581	1,600	1,600	0.00%
Remainder of Hunt County	12,694	20,455	29,582	39,175	48,250	49,100	1.76%
Split Cities**					100	300	200.00%
Johnson County	**45,769**	**67,649**	**97,165**	**126,811**	**155,900**	**159,750**	**2.47%**
Alvarado	2,129	2,701	2,918	3,288	3,850	3,900	1.30%
Burleson	7,713	11,734	16,113	20,976	31,650	33,250	5.06%
Cleburne	16,015	19,218	22,205	26,005	29,200	30,300	3.77%
Grandview	935	1,205	1,245	1,358	1,500	1,500	0.00%
Joshua	924	1,470	3,821	4,528	4,800	4,950	3.13%
Keene	2,440	3,013	3,944	5,003	6,250	6,300	0.80%
Venus*	414	518	977	1,882	2,550	2,750	7.84%
Remainder of Johnson County	16,133	28,891	47,285	66,601	80,500	81,450	1.18%
Split Cities**	-934	-1,101	-1,343	-2,840	-4,400	-4,650	5.68%
Kaufman County	**32,392**	**39,015**	**52,220**	**71,313**	**98,350**	**102,550**	**4.27%**
Combine*	249	698	1,329	1,788	1,800	1,800	0.00%
Crandall*	774	831	1,652	2,774	3,550	3,600	1.41%
Forney	1,745	2,483	4,070	5,588	11,450	12,400	8.30%
Kaufman*	4,012	4,658	5,251	6,490	6,800	6,850	0.74%
Kemp	999	1,035	1,184	1,133	1,200	1,200	0.00%
Mabank	1,239	1,443	1,458	2,151	2,950	3,000	1.69%
Talty	NI	NI	NI	1,026	1,500	1,550	3.33%
Terrell	14,182	13,225	12,490	13,606	15,750	15,850	0.63%
Remainder of Kaufman County	9,320	14,779	25,494	37,689	54,600	56,900	4.21%
Split Cities**	-128	-137	-708	-934	-1,250	-600	-52.00%
Navarro County	**31,150**	**35,323**	**39,926**	**45,124**	**48,950**	**49,500**	**1.12%**
Corsicana	19,972	21,712	22,911	24,485	25,150	25,300	0.60%
Kerens	1,446	1,582	1,702	1,681	1,750	1,750	0.00%
Remainder of Navarro County	9,732	12,029	15,313	18,958	22,050	22,450	1.81%
Palo Pinto County	**25,962**	**24,062**	**25,055**	**27,026**	**28,500**	**29,600**	**3.86%**
Mineral Wells	18,411	14,468	14,935	16,946	16,600	17,350	4.52%
Remainder of Palo Pinto County	10,586	9,631	10,602	12,256	14,100	14,450	2.48%
Split Cities**	-35	-37	-482	-2,176	-2,200	-2,200	0.00%
Parker County	**33,888**	**44,609**	**64,785**	**88,495**	**116,200**	**120,300**	**3.53%**
Aledo	620	1,027	1,169	1,726	2,500	2,550	2.00%
Annetta	NI	454	672	1,108	1,300	1,300	0.00%
Hudson Oaks	NI	309	711	1,637	1,700	1,800	5.88%
Reno*	688	1,174	2,322	2,441	2,700	2,700	0.00%
Springtown	1,194	1,658	1,740	2,062	2,650	2,700	1.89%
Weatherford	11,750	12,049	14,804	19,000	25,000	25,950	3.80%
Willow Park	230	1,113	2,328	2,849	3,700	3,700	0.00%
Remainder of Parker County	18,617	25,895	39,354	53,933	72,750	75,650	3.99%
Split Cities**	789	930	1,685	3,739	3,900	3,950	1.28%
Rockwall County	**7,046**	**14,528**	**25,604**	**43,080**	**73,500**	**76,000**	**3.40%**
Fate	NI	NI	477	463	4,200	4,800	14.29%
Heath	520	1,459	2,108	4,149	6,350	6,650	4.72%
McLendon-Chisholm	NI	NI	646	914	1,550	1,600	3.23%
Rockwall	3,121	5,939	10,486	17,976	30,750	31,400	2.11%
Royse City	1,535	1,566	2,206	2,957	9,300	10,100	8.60%
Remainder of Rockwall County	1,605	4,567	6,402	9,432	14,550	14,950	2.75%
Split Cities**	265	997	3,279	7,189	6,800	6,500	-4.41%
Somervell County	**2,793**	**4,154**	**5,360**	**6,809**	**8,750**	**9,100**	**4.00%**
Glen Rose	1,554	2,075	1,949	2,122	2,650	2,700	1.89%
Remainder of Somervell County	1,239	2,079	3,411	4,687	6,100	6,400	4.92%
Tarrant County	**715,587**	**860,880**	**1,170,103**	**1,446,219**	**1,745,050**	**1,780,150**	**2.01%**
Arlington	90,229	160,113	261,717	332,969	364,300	369,150	1.33%
Azle	4,493	5,822	8,868	9,600	10,600	10,950	3.30%
Bedford	10,049	20,821	43,762	47,152	49,050	49,450	0.82%
Benbrook	8,169	13,579	19,564	20,208	22,850	23,450	2.63%
Blue Mound	1,283	2,169	2,133	2,388	2,400	2,400	0.00%
Colleyville	3,342	6,700	12,724	19,636	22,150	22,500	1.58%
Crowley	2,652	5,852	6,974	7,467	11,250	11,750	4.44%
Dalworthington Grdns	757	1,100	1,758	2,186	2,300	2,350	2.17%
Edgecliff Village*	1,143	2,695	2,715	2,550	2,550	2,600	1.96%

	Final Census 4/1/70	Final Census 4/1/80	Final Census 4/1/90	Final Census 4/1/00	Estimated Population 1/1/07	Estimated Population 1/1/08	Growth Rate 2007-2008
Tarrant County (continued)							
Euless	19,316	24,002	38,149	46,005	53,400	54,000	1.12%
Everman	4,570	5,387	5,672	5,836	5,800	5,800	0.00%
Forest Hill	8,236	11,684	11,482	12,949	11,950	11,950	0.00%
Fort Worth	393,455	385,164	447,619	534,694	686,850	702,850	2.33%
Grapevine	7,049	11,801	29,198	42,059	45,550	47,150	3.51%
Haltom City	28,127	29,014	32,856	39,018	39,400	39,500	0.25%
Haslet	276	262	795	1,134	1,400	1,400	0.00%
Hurst	27,215	31,420	33,574	36,273	38,500	38,750	0.65%
Keller	1,474	4,156	13,683	27,345	37,700	38,400	1.86%
Kennedale	3,076	2,594	4,096	5,850	6,350	6,450	1.57%
Lake Worth	4,958	4,394	4,591	4,618	4,850	4,850	0.00%
Lakeside*	988	957	816	1,040	1,250	1,250	0.00%
Mansfield	3,658	8,102	15,616	28,031	51,300	53,200	3.70%
N. Richland Hills	16,514	30,592	45,895	55,635	64,050	65,750	2.65%
Pantego	1,779	2,431	2,371	2,318	2,700	2,700	0.00%
Pelican Bay	NI	NI	1,271	1,505	1,800	1,800	0.00%
Richland Hills	8,865	7,977	7,978	8,132	8,300	8,350	0.60%
River Oaks	8,193	6,890	6,580	6,985	7,200	7,300	1.39%
Saginaw	2,382	5,736	8,551	12,374	18,950	19,250	1.58%
Sansom Park	4,771	3,921	3,928	4,181	4,250	4,250	0.00%
Southlake	2,031	2,808	7,082	21,519	25,700	26,100	1.56%
Watauga	3,778	10,284	20,009	21,908	24,150	24,250	0.41%
Westworth Village	4,578	3,651	2,350	2,124	3,000	3,050	1.67%
White Settlement	13,449	13,508	15,472	14,831	15,900	16,150	1.57%
Remainder of Tarrant County	23,122	28,897	32,416	37,410	50,150	52,700	5.08%
Split Cities**	1,600	6,397	17,839	28,289	47,150	48,350	2.55%
Wise County	**19,687**	**26,575**	**34,679**	**48,793**	**63,050**	**64,500**	**2.30%**
Alvord	791	874	865	1,007	1,250	1,250	0.00%
Boyd	695	889	1,041	1,099	1,200	1,200	0.00%
Bridgeport*	3,614	3,737	3,581	4,827	5,600	5,650	0.89%
Chico	NI	NI	800	947	1,100	1,100	0.00%
Decatur	3,240	4,104	4,245	5,201	5,750	5,800	0.87%
Newark	407	529	651	887	1,000	1,000	0.00%
Rhome	NA	490	605	551	1,450	1,500	3.45%
Runaway Bay	NI	29	700	1,104	1,200	1,200	0.00%
Remainder of Wise County	10,940	16,413	22,191	33,170	44,500	45,800	2.92%
Nine County Urban Area (Collin, Dallas, Denton, Ellis Johnson, Kaufman, Parker, Rockwall, Tarrant)	**2,351,569**	**2,930,545**	**3,885,415**	**5,030,828**	**6,076,650**	**6,201,100**	**2.05%**
NCTCOG Region (16 counties)	**2,506,618**	**3,116,181**	**4,111,750**	**5,309,277**	**6,407,850**	**6,538,850**	**2.04%**

*2000 population totals have been officially changed by the Census Bureau ** Split Cities - Represent corporate boundaries that extend into another county *No data provided by city

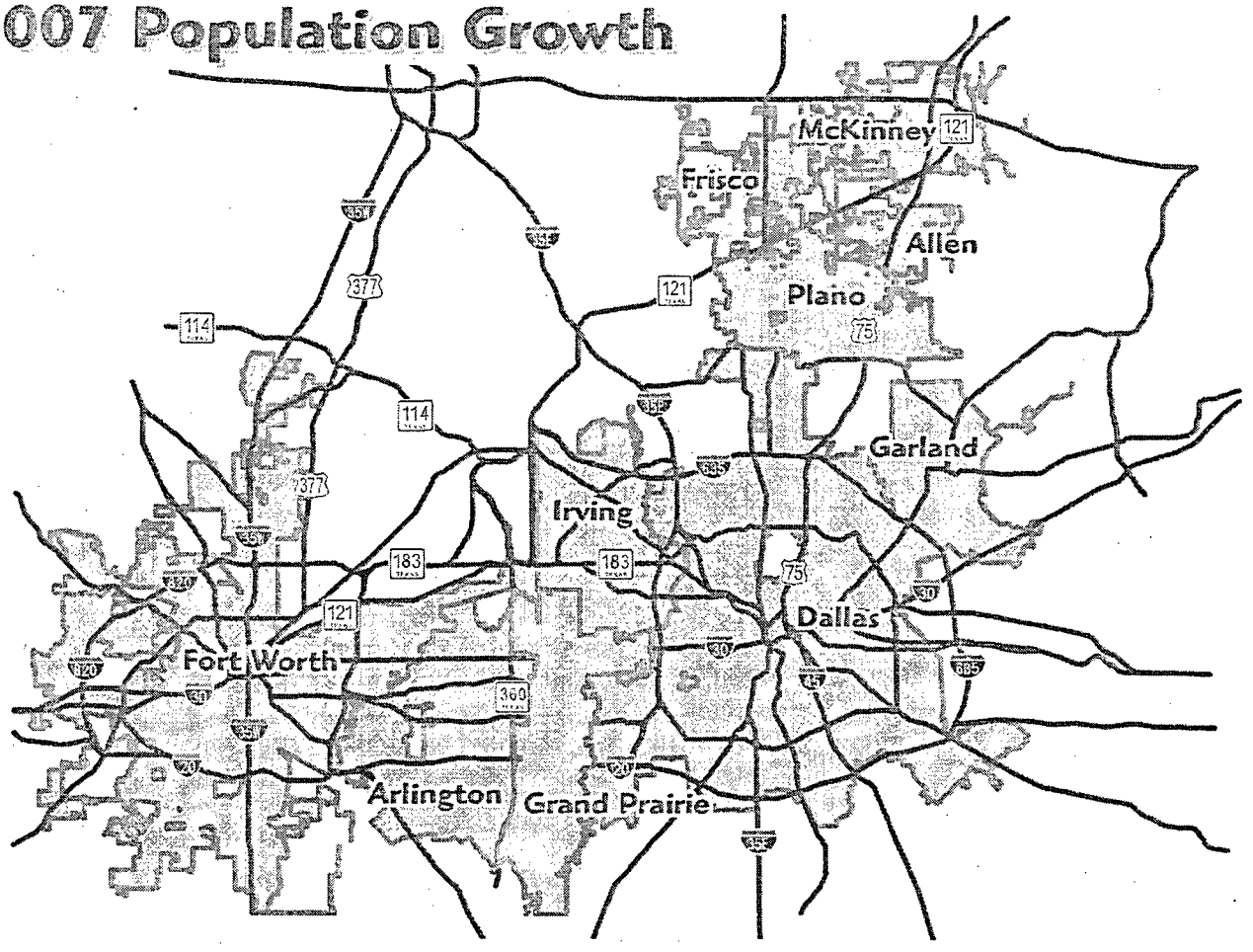
SPLIT CITY TOTALS

ADDED TO	SPLIT CITIES	POPULATION
Collin County	Dallas	47,465
	Garland	161
	Richardson	25,106
	Royse City	1,336
	Sachse	4,802
Dallas County	Carrollton	50,570
	Combine	624
	Grapevine	0
	Lewisville	292
	Ovilla	322
	Wylie	440
Denton County	Coppell	598
	Dallas	28,109
	Fort Worth	1,449
	Frisco	33,959
	Plano	5,298
	Southlake	790

ADDED TO	SPLIT CITIES	POPULATION
Ellis County	Cedar Hill	289
	Glenn Heights	2,645
	Grand Prairie	52
	Mansfield	126
Hunt County	Royse City	123
Johnson County	Mansfield	1,418
Kaufman County	Dallas	0
	Seagoville	10
Parker County	Azle	1,729
	Mineral Wells	2,214
Rockwall County	Dallas	21
	Garland	0
	Rowlett	7,167
	Wylie	920
Tarrant County	Burleson	6,072
	Grand Prairie	47,827

For technical questions, contact ***Duane Dankesreiter at ddankesreiter@nctcog.org***, Research and Information Services, NCTCOG. To order copies of this and other COG publications, contact ***Alice Webster at awebster@nctcog.org***, Regional Information Center, NCTCOG, P. O. Box 5888 Arlington, TX 76005. ***(817) 695-9140.***

2007 Population Growth



Top Ten Cities account for **56%** of all **Growth** (73,200 persons)

Population Estimates Methodology:

NCTCOG's population estimates are based on current housing inventories for each city in the NCTCOG region with a population of 1,000 or more. The figures are reviewed at the regional level for consistency with other indicators of regional population such as labor force estimates and vital statistics.

Cities complete a building permit form that provides NCTCOG with information on building completions, demolitions, annexations and other changes in housing stock that occurred throughout the prior year. The reported housing units by type (single family, multi-family, other) are added to the 2000 Census housing stock figures to develop estimates of current year housing stock. Current estimates use 2000 Census persons per household figures. Occupancy rates are derived through purchased secondary data in order to reflect existing market conditions.

These rates were used in conjunction with building permit data to produce city level population estimates. Final population for January 1, 2008 also includes estimates of persons living in group quarters (nursing homes, dormitories, prisons etc.) All figures are reviewed by each city prior to publication. County level estimates are adjusted for cities that are in more than one county.

Remainder of county totals are estimated based upon secondary resources and have been adjusted to reflect annexations.

The percent growth column provides a convenient indicator of the annual growth for each city and county.

DIFFERING CENSUS BUREAU ESTIMATES

There is normally a variance between Census Bureau and NCTCOG estimates as a result of several factors. They include:

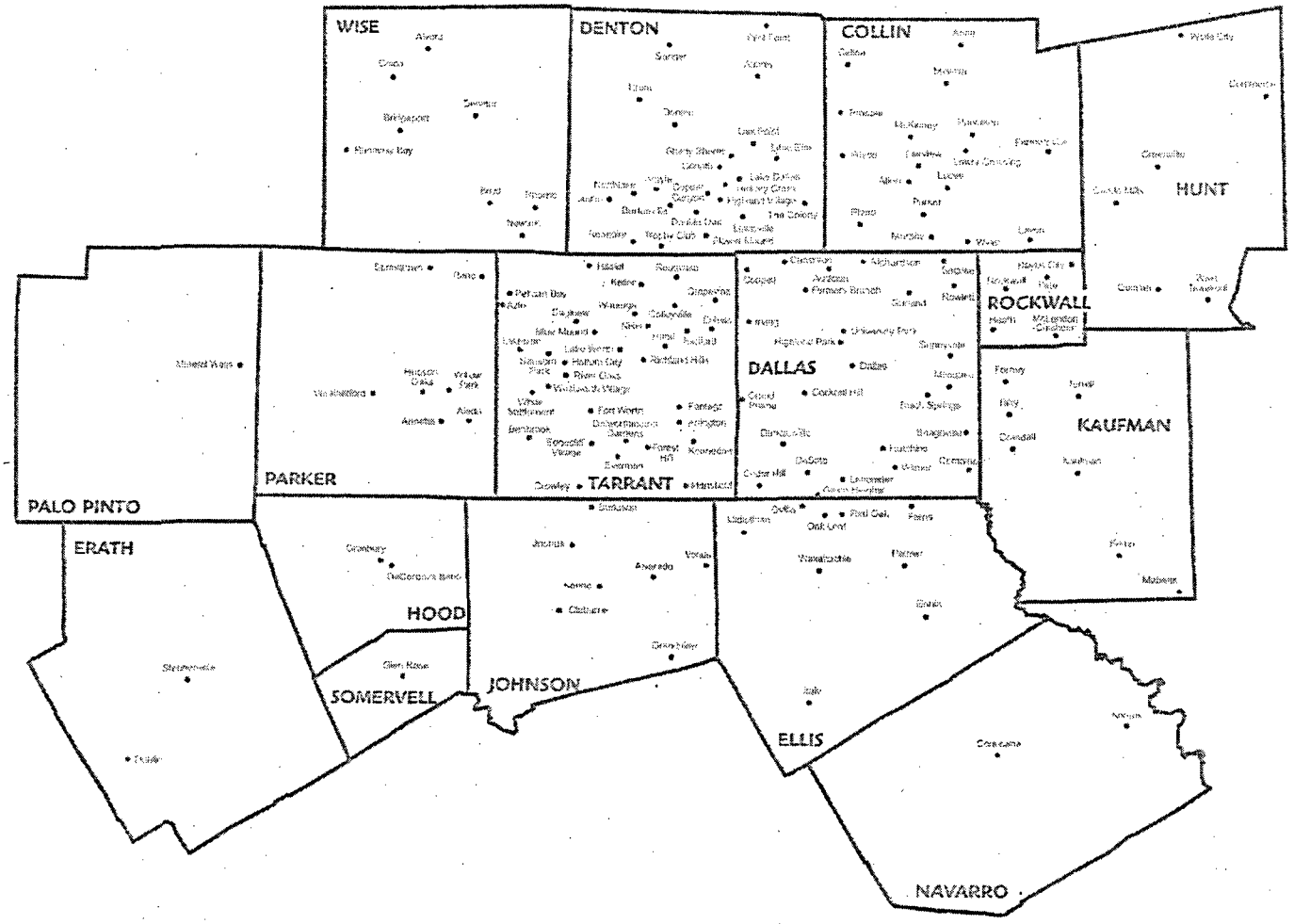
- The Census Bureau estimates are for the year ending July, 2007 while the NCTCOG estimates are for the year ending December, 2007;
- The Census Bureau methodology is based on births, deaths, net domestic migration, and net international migration; and
- The NCTCOG methodology is based on building permits, occupancy factors and household size factors.

CHANGES TO ESTIMATION METHODOLOGY

Due to refinements in the NCTCOG's 2008 Population Estimates methodology, care should be taken in comparing with previous years published estimates.

Map of the North Central Texas Region

(All Cities over 1,000)



North Central Texas Council of Governments
P. O. Box 5888
Arlington, TX 76005-5888

REFERENCE 23

FID	Shape *	pwsid	sourceid	epid	type	waterbody	segment	constr	confine	opstat	gpm
11182	Point	1840005	S1840005A	002	RS	LAKE WEATHERFORD	0832	X	X	O	11200
11183	Point	1840006	G1840006A	001				T	F	O	40
11184	Point	1840006	G1840006B	001				U	F	O	18
11185	Point	1840006	G1840006C	001				T	F	O	50
11186	Point	1840006	G1840006D	002				T	F	O	22
11187	Point	1840006	G1840006E	002				T	F	O	85
11188	Point	1840006	G1840006F	002				T	F	O	74
11189	Point	1840006	G1840006G	002				T	F	O	54
11190	Point	1840006	G1840006H	001				T	F	O	70
11191	Point	1840006	G1840006L	004				T	T	O	18
11192	Point	1840006	G1840006M	004				T	T	O	58
11193	Point	1840006	G1840006N	005				T	T	O	58
11194	Point	1840006	G1840006O	005				T	T	O	20
11195	Point	1840006	G1840006P	006				T	F	O	22
11196	Point	1840006	G1840006Q	006				T	F	O	67
11197	Point	1840006	G1840006S	006				T	T	O	17
11198	Point	1840006	G1840006T	006				T	F	O	97
11199	Point	1840006	G1840006U	006				T	T	O	43
11200	Point	1840006	G1840006V	007				T	T	O	17
11201	Point	1840006	G1840006W	007				T	T	O	14
11245	Point	1840027	G1840027A	001				T	F	O	75
11246	Point	1840027	G1840027B	001				T	F	O	23
11247	Point	1840027	G1840027C	001				T	F	O	74
11248	Point	1840027	G1840027D	001				T	F	O	53
11249	Point	1840027	G1840027E	001				T	F	O	77
11250	Point	1840027	G1840027F	001				T	F	O	69
11251	Point	1840027	G1840027G	004				T	F	E	48
11252	Point	1840027	G1840027I	006				T	F	E	71
11253	Point	1840027	G1840027J	007				U	T	E	38
11254	Point	1840027	G1840027K	008				T	T	O	47
11255	Point	1840027	G1840027L	008				T	T	O	35
11256	Point	1840027	G1840027M	008				U	T	O	55
11257	Point	1840027	G1840027N	001				T	F	O	75
11258	Point	1840027	G1840027O	001				T	F	O	110
11259	Point	1840027	G1840027P	009				T	T	O	20
11260	Point	1840027	G1840027Q	009				T	T	O	22
11261	Point	1840027	G1840027R	010				T	T	O	32
11262	Point	1840027	G1840027S	010				T	T	O	12
11263	Point	1840027	G1840027U	011				U	T	O	57
11264	Point	1840027	G1840027V	001				T	T	O	105
11266	Point	1840031	G1840031A	001				T	F	O	53
11267	Point	1840031	G1840031B	001				T	F	O	49
11268	Point	1840031	G1840031C	002				U	F	O	67
11269	Point	1840031	G1840031D	002				T	T	O	45
11307	Point	1840088	G1840088A	001				T	T	O	25
11318	Point	1840095	G1840095A	001				F	F	O	20
11319	Point	1840095	G1840095B	001				F	F	O	18
11323	Point	1840099	G1840099A	001				T	T	O	11
11324	Point	1840099	G1840099B	001				T	F	O	16

scrnbot	scrntop	drill_date	latdd	longdd	hdatum	alluvial	compliant
-9999	-9999		32.772499	-97.674164	27	X	Y
225	115	19660503	32.76342	-97.689453	83	N	Y
142	122	19841200	32.7635	-97.689919	83	N	Y
233	120	19850621	32.7635	-97.692108	83	N	Y
210	61	19860120	32.761921	-97.69928	83	N	Y
195	65	19860128	32.764332	-97.698334	83	N	Y
210	80	19870808	32.76717	-97.699112	83	N	Y
260	130	19940510	32.759892	-97.698418	83	N	Y
220	130	19880701	32.762829	-97.688606	83	N	Y
220	80	20010418	32.74757	-97.703278	27	N	Y
190	70	20010418	32.746738	-97.702919	27	N	Y
200	120	19851130	32.743561	-97.700607	83	N	Y
210	131	19900808	32.74622	-97.700691	83	N	Y
250	102	19850400	32.748131	-97.689171	27	N	Y
190	80	19860804	32.74184	-97.68821	27	N	Y
215	150	19910601	32.741268	-97.688553	27	N	Y
205	60	19910805	32.739262	-97.688042	27	N	Y
266	70	19950425	32.74855	-97.689163	83	N	Y
240	140	19930826	32.753078	-97.695641	83	N	Y
220	140	19940801	32.770329	-97.695717	83	N	Y
141	12	19670705	32.781113	-97.67028	27	N	Y
151	60	19710717	32.776943	-97.667221	27	N	Y
160	22	19760820	32.779446	-97.674721	27	N	Y
179	20	19760823	32.781113	-97.672226	27	N	Y
174	54	19780429	32.781666	-97.668053	27	N	Y
150	50	19780725	32.784168	-97.674164	27	N	Y
153	60	19780801	32.78611	-97.673332	27	N	Y
218	70	19840500	32.765278	-97.646942	27	N	Y
220	200	19841200	32.742222	-97.627502	27	N	Y
240	140	19860225	32.753887	-97.647499	27	N	Y
246	206	19860812	32.755001	-97.653336	27	N	Y
260	240	99999999	32.753334	-97.653336	27	N	Y
290	80	19940913	32.780277	-97.659721	27	N	Y
650	550	19961001	32.780834	-97.659721	27	N	Y
640	456	20000708	32.748329	-97.63488	27	N	Y
214	126	20000709	32.748051	-97.63485	27	N	Y
260	230	19790615	32.743057	-97.666664	27	N	Y
240	210	19790626	32.743057	-97.666664	27	N	Y
240	220	19990000	32.744167	-97.678612	27	N	Y
500	390	20010421	32.784425	-97.675189	83	N	Y
170	150	19640000	32.755581	-97.681808	83	N	Y
180	80	19790120	32.756001	-97.681641	83	N	Y
135	115	19830408	32.757389	-97.682251	83	N	Y
250	110	20040709	32.756661	-97.686564	83	N	Y
238	192	19830620	32.749131	-97.710111	83	N	Y
230	210	19830000	32.750753	-97.676594	83	N	Y
250	230	19830000	32.750789	-97.677039	83	N	Y
363	338	19830121	32.739723	-97.717224	27	N	Y
370	322	19961104	32.7425	-97.72139	27	N	Y

FID	Shape *	pwsid	sourceid	epid	type	waterbody	segment	constr	confine	opstat	gpm
11328	Point	1840105	G1840105A	001				T	F	O	30
11342	Point	1840114	G1840114A	001				T	F	O	17
11347	Point	1840123	G1840123A	001				T	T	O	64
11348	Point	1840126	G1840126A	001				T	F	O	46
11349	Point	1840126	G1840126B	002				T	F	O	60
11350	Point	1840126	G1840126C	001				T	T	O	40
11351	Point	1840126	G1840126D	001				T	T	O	40
11352	Point	1840126	G1840126E	003				T	F	O	110
11353	Point	1840126	G1840126F	003				T	F	O	88
11354	Point	1840126	G1840126G	003				T	F	O	86
11355	Point	1840126	G1840126H	003				T	F	O	102
11391	Point	1840164	G1840164A	001				T	F	O	110
11392	Point	1840165	G1840165A	001				U	F	O	0

scrnbot	scrntop	drill_date	latdd	longdd	hdatum	alluvial	compliant
460	440	19631108	32.788887	-97.69722	27	N	Y
235	180	19841205	32.750557	-97.67778	27	N	Y
240	140	19860812	32.729313	-97.614159	83	N	Y
248	120	19950000	32.735554	-97.676941	27	N	Y
255	150	19970820	32.739723	-97.680557	27	N	Y
225	100	19980814	32.736111	-97.673615	27	N	Y
240	100	19980821	32.735001	-97.671501	27	N	Y
580	250	19990730	32.72385	-97.67617	27	N	Y
580	270	19991101	32.725079	-97.676208	27	N	Y
590	300	20020327	32.72366	-97.67794	27	N	Y
590	300	20020405	32.724529	-97.677467	27	N	Y
485	405	20070227	32.703611	-97.662222	83	N	Y
-9999	-9999	99999999	32.7525	-97.713333	83	N	Y

REFERENCE 24

FID	Shape *	TRACKNO	OWN_NAME	OWN_STREET	OWN_CITY	OWN_STATE
3049	Point	3457	BRUCE CAMPBELL	122 orth Chase Rd.	Willow Park	TX
3465	Point	3875	DON GUNTER	3400 Live Oak Rd.	Willow Park	TX
3467	Point	3877	CARTER CONSTR.	181 Oak Crest Dr.	Annetta	TX
3468	Point	3878	CARTER CONSTR.	181 Oak Crest Dr.	Annetta	TX
4642	Point	5063	RUSSELL GREENE	513 Vista Drive	Willow Park	TX
6334	Point	6783	GARY WILSON	2801 FM 730	Weatherford	TX
6339	Point	6788	W. H. HANSEN	4823 Quail Crest	Willow Park	TX
6768	Point	7222	CHARLES WOOD	3901 White Settlement	Willow Park	TX
6771	Point	7225	DORAN CONSTRUCTION	310 Creek Bend	Annetta	TX
6772	Point	7226	DORAN CONSTRUCTION	308 Creek Bend	Annetta	TX
6773	Point	7227	DORAN CONSTRUCTION	306 Creek Bend	Annetta	TX
6774	Point	7228	DORAN CONSTRUCTION	402 Woodridge	Hudson Oaks	TX
11172	Point	11668	Jim Walter Homes	10305 S. Freeway	FT.Worth	TX
11402	Point	11901	JEAN MARTIN	700 Kings Gate	Willow Park	TX
11449	Point	11952	TOM HORCH	901 Sunbass Ct.	Willow Park	TX
11662	Point	12208	Jeff Pringle	315 NE 27TH Ave	Mineral Wells	TX
12396	Point	12947	PAUL PORTER (Shaw)	431 Valley Rd.	Weatherford	TX
13692	Point	14256	ROHRIG	200 CREEK BEND CT	ALEDO	TX
14014	Point	14580	JAMES JOHNSON	357 CREEK BEND	ALEDO	TX
16361	Point	16944	MIKE AND KAREN BRASOVAN	105 FOREST CT	ALEDO	TX
16374	Point	16959	JEFF AND SANDY CAFFEE	183 SILVERSAGE CT	WEATHERFORD	TX
16478	Point	17063	MR. STONE	118 Boone Ct.	Weatherford	TX
16491	Point	17076	DORAN CUSTOM HOMES	Lot 7 Block 2, Creek Bend Ct.	Annetta	TX
16492	Point	17077	DORAN CUSTOM HOMES	Lot 5 Block 2, Creek Bend Ct.	Annetta	TX
18127	Point	18738	MR. TATE	1405 CLAIBORNE	ALEDO	TX
18147	Point	18758	JEFF BYRN	1208 STEEPLECHASE	ALEDO	TX
18149	Point	18760	HYNES CUSTOM HOMES	1441 WOODRIDGE DR	ALEDO	TX
18423	Point	19036	JIM SWEENEY	417 QUAIL RIDGE	ALEDO	TX
18689	Point	19302	JIM HORTON	3746 WILLOW CR	WILLOW PARK	TX
18803	Point	19416	MR. BRIDGE	312 Verve Rd.	Weatherford	TX
18817	Point	19430	LEE YOUNG	817 Sambass	Weatherford	TX
20676	Point	21301	Jay E. Stringer	107 Allie Ct	Aledo	TX
22355	Point	22996	CLEMENTS	303 CORONADO BEND CT	AZLE	TX
22821	Point	23462	JOHNSON, JAMES	129 WILLOW SPRINGS LN	ALEDO	TX
24762	Point	25444	Rod Campbell	1501 Greenleaf Court	Aledo	TX
25097	Point	25781	LARRY HOLLAND	110 Timber Ct.	Aledo	TX
25194	Point	25883	ADAMS, BILL AND ALLISON	1401 CLAIBORNE	ALEDO	TX
25205	Point	25894	ELLIS, STEVE AND JACKIE	226 W. MOORE ST	GRANBURY	TX
25690	Point	26390	TOMLIN, TRACY	650 DUNCAN RD	ALEDO	TX
25712	Point	26412	KERSH, MIKE AND MARISSA	212 MEGEN CT	ALEDO	TX
25868	Point	26577	WHITWORTH, RUSSELL	14170 HWY 377 S	FT. WORTH	TX
26209	Point	26949	Mike Herrison	9210 Annette Road	Aledo	TX
26351	Point	27091	STONE, MR.	1405 KEENELAND	ALEDO	TX
27806	Point	28581	DORAN CONSTRUCTION	1449 Woodridge Road	Aledo	TX
27810	Point	28585	DORAN CONSTRUCTION	1452 Woodridge Road	Aledo	TX
27811	Point	28586	DORAN CONSTRUCTION	1448 Woodridge Road	Aledo	TX
28297	Point	29081	Timothy Hampton Kelley	512 Muir Hill Court	Annetta	TX
28301	Point	29085	Paul Conner	127 Allie Court	Annetta	TX
28903	Point	29703	J & F HOMES	100 AUTUMNWOOD DR	ALEDO	TX

OWN_ZIP	DRILL_DATE	HOLE_DEPTH	GRID_NUM	COMPLETION	DRILL_METH	WELL_TYPE	TYPE_WORK
76087	10/25/2001	230	32119	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76088	9/27/2001	220	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	11/21/2001	220	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	11/21/2001	260	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087-7959	1/14/2002	220	32119	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76086	3/5/2002	240	32117	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	3/6/2002	200	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	5/3/2002	200	32118	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	5/1/2002	200	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	4/29/2002	200	32192		AIR ROTARY	DOMESTIC	NEW WELL
76087	4/29/2002	200	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76086	5/2/2002	200	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76140	5/20/2002	240	32117	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	6/11/2002	200	32119	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	7/11/2002	200	32193	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76067	6/25/2002	240	32194	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76086	7/24/2002	50	32118	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	9/6/2002	221	32195	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	9/24/2002	240	32195	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	1/27/2003	200	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	9/25/2002	150	32195	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76086	12/20/2002	220	32118	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	1/30/2003	200	32195	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	1/9/2003	200	32195	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	3/10/2003	200	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	3/11/2003	240	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	3/12/2003	260	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	3/5/2003	260	32193	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76086	3/17/2003	200	32118	GRAVEL PACKED	AIR ROTARY	DOMESTIC	REPLACEMENT WELL
76087	4/2/2003	200	32119	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	4/2/2003	180	32193	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	5/16/2003	190	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76020	6/23/2003	270	32195	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	7/11/2003	180	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	7/23/2003	600	32193	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	9/9/2003	200	32195	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	7/14/2003	170	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76048	7/18/2003	240	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	7/1/2003	480	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	8/29/2003	265	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76126	10/8/2003	205	32201	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	8/21/2003	160	32196	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	9/5/2003	180	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	9/17/2003	200	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	10/24/2003	200	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	9/11/2003	200	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	5/7/2003	180	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	5/8/2003	200	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	11/19/2003	340	32201	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL

COUNTY	WELL_STREE	WELL_CITY	WELL_ZIP	OWN_NUMBER	QUADRANGLE	LATDD
Parker	122 North Chase Rd.	Willow Park	76087		3297-342	32.76389
Parker	3400 Live Oak Rd.	Willow Park	76088		3297-313	32.71528
Parker	181 Oak Crest Dr.	Annetta	76087	1	3297-313	32.71833
Parker	#48 Oak Crest Dr.	Annetta	76087	2	3297-313	32.71528
Parker	513 Vista Drive	Willow Park	76087-7959		3297-342	32.78583
Parker	2801 FM 730	Weatherford	76086		3297-342	32.79139
Parker	4823 Quail Crest	Willow Park	76087		3297-313	32.74306
Parker	3901 White Settlement	Willow Park	76087		3297-342	32.78583
Parker	310 Creek Bend	Annetta	76087		3297-313	32.70861
Parker	308 Creek Bend	Annetta	76087		3297-313	32.70861
Parker	306 Creek Bend	Annetta	76087		3297-313	32.70833
Parker	402 Woodridge	Hudson Oaks	76086		3297-313	32.73806
Parker	2801 Pittman Rd.	Weatherford	76087		3297-342	32.7725
Parker	700 Kings Gate	Willow Park	76087		3297-342	32.75556
Parker	901 Sunbass Ct.	Willow Park	76087		3297-313	32.74833
Parker	710 North Oakridge DR.	Weatherford	76087		3297-313	32.7075
Parker	431 Valley Rd.	Weatherford	76086		3297-342	32.7825
Parker	200 CREEK BEND CT	ALEDO	76087		3297-313	32.70722
Parker	357 CREEK BEND	ALEDO	76008		3297-313	32.70611
Parker	105 FOREST CT	ALEDO	76008		3297-313	32.71667
Parker	183 SILVERSAGE CT	WEATHERFORD	76087		3297-313	32.70611
Parker	118 Boone Ct.	Weatherford	76086		3297-342	32.7875
Parker	Lot 7 Block 2, Creek Bend Ct.	Annetta	76087		3297-313	32.70583
Parker	Lot 5 Block 2, Creek Bend Ct.	Annetta	76087		3297-313	32.70722
Parker	1405 CLAIBORNE	ALEOD	76008		3297-313	32.73389
Parker	1208 STEEPLECHASE	ALEDO	76008		3297-313	32.73444
Parker	1441 WOODRIDGE DR	ALEDO	76008		3297-313	32.73611
Parker	417 QUAIL RIDGE	ALEDO	76008		3297-313	32.72722
Panola	3746 WILLOW CR	WILLOW PARK	76086	#2	3297-342	32.7825
Parker	312 Verve Rd.	Weatherford	76087		3297-342	32.76139
Parker	817 Sambass	Weatherford	76087		3297-313	32.7475
Parker	107 Allie Ct.	Aledo	76008		3297-313	32.72944
Parker	303 CORONADO BENT CT	AZLE	76020		3297-313	32.70806
Parker	129 WILLOW SPRINGS LN	ALEDO	76008		3297-313	32.71083
Parker	1501 Greenleaf Court	Aledo	76008		3297-313	32.73083
Parker	110 Timber Ct.	Aledo	76008		3297-313	32.70667
Parker	1401 CLAIBORNE	ALEDO	76008		3297-313	32.73
Hood	226 W MOORE ST	GRANBURY	76048		3297-313	32.73
Parker	650 DUNCAN RD	ALEDO	76008		3297-313	32.71778
Parker	212 MEGEN CT	ALEDO	76008		3297-313	32.73833
Tarrant	14170 HWY 377 S	FT. WORTH	76126		3297-314	32.71917
Parker	9210 Annette Road	Aledo	76008		3297-313	32.69361
Parker	1405 KEENELAND	ALEDO	76008		3297-313	32.73
Parker	1449 Woodridge Road	Aledo	76008		3297-313	32.7375
Parker	1452 Woodridge Road	Aledo	76008		3297-313	32.7375
Parker	1448 Woodridge Road	Aleco	76008		3297-313	32.73722
Parker	512 Muir Hill Court	Annetta	76008		3297-313	32.74111
Parker	127 Allie Court	Annetta	76087		3297-313	32.7375
Parker	114 ALEDO POINTE	ALEDO	76008		3297-314	32.7225

LONGDD
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-97.675
-97.60944

FID	Shape *	TRACKNO	OWN_NAME	OWN_STREET	OWN_CITY	OWN_STATE
28909	Point	29709	J & F HOMES	100 AUTUMNWOOD	ALEDO	TX
29696	Point	30500	TONY MAPLES	196 Forrest Bend	Weatherford	TX
29775	Point	30579	VAN HAECKE, ERWIN	1350 CLAIBORNE	ALEDO	TX
30046	Point	30852	Dean Williams	1434 Keeneland	Aledo	TX
30402	Point	31208	ASKEW HOMES, JOHN	147 ALEDO CREEKS RD	FT. WORTH	TX
31466	Point	32275	Mike Murritta	3907 Fort Worth Hwy.	Weatherford	TX
31524	Point	32333	Tony Aaron	1413 Cherry Hill	Weatherford	TX
32141	Point	32951	Ron Davis	1315 Wood Glen Ct.	Anetta	TX
32854	Point	33670	TOM MITCHELL	1111 W. SANFORD	ARLINGTON	TX
34323	Point	35154	SELF, BARBARA AND MARK	106 SADDLEBACK LN	ALEDO	TX
35005	Point	35839	BOBBY DORAN	145 Forest Bend Lane	Aledo	TX
35006	Point	35840	BOBBY DORAN	155 Forest Bend Lane	Aledo	TX
36179	Point	37016	JOHNSON AND MCDAVID LAND DEVELOPMENT	102 S.W. DR	ALEDO	TX
36412	Point	37249	J & F HOMES	108 PRAIRIE RIDGE	ALEDO	TX
36559	Point	37397	Charlie O'Neal	FM5	Annetta	TX
36563	Point	37401	Charlie O'Neal	FM 5	Annetta	TX
36637	Point	37475	H.L.Coats, Inc.	101Southwest Dr.	Aledo	TX
36641	Point	37479	JB Homes	101Ruth Court	Aledo	TX
36642	Point	37480	Beggs Cattle Company	621 Ft. Worth Club Bldg.	Ft. Worth	TX
36905	Point	37747	Bill McKay	114 Allie Ct.	Weatherford	TX
36917	Point	37759	Joe Shaw	3401 Cliff View	Weatherford	TX
37012	Point	37854	In Heaven Custom Homes	234 Bayne Road	Haslett	TX
37200	Point	38042	J & F HOMES	105 SADDLE BACK	ALEDO	TX
37744	Point	38587	Steve Hawkins	124 Oak Vista Dr.	Wetherford	TX
37761	Point	38604	DENNIS JERKE	369 WEST HILL DR.	ANNETTA NORTH	TX
37826	Point	38669	Bill Sallee	241 Arapaho	Weatherford	TX
38090	Point	38933	Patrick Presley	6224 I-20 Service Rd	Wetherford	TX
38359	Point	39207	JOHNSON, MITCH	1231 OLD ANNETTA RD	ALEDO	TX
38365	Point	39213	JOHNSON, MITCH	1231 OLD ANNETTA RD	ALEDO	TX
38392	Point	39240	C. N. MARSH	12928 FM 4	Granbury	TX
38955	Point	39812	Bernie Kirkland	2912 E. Bankhead Hwy	Weatherford	TX
38965	Point	39822	Scott Dulin	210 Quail Ridge Rd.	Weatherford	TX
39838	Point	40697	Grayner	1112 Woodbridge Ct.	Weatherford	TX
39908	Point	40767	McClure Construction	Bruton Hill Rd.	Weatherford	TX
39957	Point	40816	George Teague	3305 Cliff View	Weatherford	TX
40691	Point	41552	LASSWELL, MARSHALL	1621 FREDERICKS	FT. WORTH	TX
40711	Point	41572	NATURE SCOPES	287 Mikus Rd.	Hudson Oaks	TX
41064	Point	41925	BILL COURSEY	3534 Cliffview	Weatherford	TX
41922	Point	42789	Paul Thurman	FM 5	Aledo	TX
42145	Point	43013	LEDFORD, DENNIS	1170 OLD AIRPORT RD	ALEDO	TX
42214	Point	43083	MIKE BYRD	3410 CLIFF VIEW LOOP	WEATHERFORD	TX
42223	Point	43092	BUDDIE BOYLES	1421 SARATOGA LANE	ALEDO	TX
42508	Point	43378	steve hawkins	124 oak vista dr	wetherford	TX
42509	Point	43379	steve hawkins	108 oak vista dr	weatherford	TX
43473	Point	44347	STEVE FERRICH	1201 FORREST PARK	WEATHERFORD	TX
43766	Point	44640	BILL SALLEE	224 ARAPAHO RIDGE	WEATHERFORD	TX
44029	Point	44903	J & F HOMES CUSTOMER	101 SPUR CT	ALEDO	TX
44191	Point	45065	GRAMMER, JILL	1100 WOODBRIDGE CT	WILLOW PARK	TX
44343	Point	45217	KEELING, JIM	160 QUAIL RIDGE RD	ALEDO	TX

OWN_ZIP	DRILL_DATE	HOLE_DEPTH	GRID_NUM	COMPLETION	DRILL_METH	WELL_TYPE	TYPE_WORK
76008	11/11/2003	320	32201	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76086	10/23/2003	200	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	11/21/2003	210	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	6/9/2003	185	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76126	1/14/2004	190	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	5/5/2003	225	32193	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	5/29/2003	250	32193	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	5/6/2003	225	32193	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76012	1/29/2004	495	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	3/8/2004	270	32201	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	3/30/2004	200	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	3/30/2004	200	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	4/15/2004	220	32192	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	4/19/2004	310	32201	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	6/11/2003	212	32195	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	6/12/2003	211	32195	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	6/6/2003	200	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	6/17/2003	164	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	6/19/2003	412	32201	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	6/24/2003	500	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76086	6/26/2003	250	32118	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76052	3/20/2004	200	32192	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	4/23/2004	280	32201	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76086	5/22/2004	180	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	1/8/2004	194	32192	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76087	4/8/2004	250	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76086	4/25/2004	240	32201	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	5/11/2004	210	32195	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	5/12/2004	200	32195	GRAVEL PACKED	AIR HAMMER	DOMESTIC	REPLACEMENT WELL
76049	3/28/2004	220	32127	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	4/30/2004	125	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76086	5/6/2004	150	32193	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
	7/3/2003	260	32119	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
	6/26/2003	245	32118	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
	6/14/2003	260	32118	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76107	7/10/2004	290	32201	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76087	3/3/2004	200	32118	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76086	5/17/2004	180	32118	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	5/11/2004	200	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	7/28/2004	210	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	REPLACEMENT WELL
76087	6/15/2004	250	32118	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	6/17/2004	200	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76086	7/10/2004	200	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76086	7/11/2004	280	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	7/6/2004	225	32118	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76086	7/12/2004	250	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	8/12/2004	280	32201	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76087	8/23/2004	260	32193	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	7/7/2004	250	32193	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL

COUNTY	WELL_STREE	WELL_CITY	WELL_ZIP	OWN_NUMBER	QUADRANGLE	LATDD
Parker	106 ALEDO POINTE	ALEDO	76008		3297-314	32.72222
Parker	196 Forrest Bend	Weatherford	76086		3297-313	32.73889
Parker	1350 CLAIBORNE	ALEDO	76008		3297-313	32.73028
Parker	Same				3297-313	32.74222
Parker	136 ALLIE CT	ALEDO	76008		3297-313	32.73194
Parker	3 mi. E. of Weatherford				3297-313	32.74194
Parker	6 mi. E Weatherford off I-20 on Hwy 5 in McDavid Est.				3297-313	32.71972
Parker	Same				3297-313	32.71611
Somervell	15121 MITCHELL BENT CT.	GRANBURY	76048		3297-313	32.7175
Parker	106 SADDLEBACK LN	ALEDO	76008		3297-314	32.72167
Parker	145 Forest Bend Lane	Aledo	76008		3297-313	32.74
Parker	155 Forest Bend Lane	Aledo	76008		3297-313	32.73889
Parker	102 S.W. DR	ALEDO	76008		3297-313	32.70833
Parker	108 PRAIRIE RIDGE	ALEDO	76008		3297-314	32.71917
Parker	FM5	Annetta	76008	2	3297-313	32.69778
Parker	FM 5	Annetta	76008	3	3297-313	32.69611
Parker	101Southwest	Aledo	76008		3297-313	32.72778
Parker	101Ruth Court	Aledo	76008		3297-313	32.73028
Parker	100 Beggs Ranch Rd.	Weatherford	76087		3297-314	32.74611
Parker	6 mi. SE of Weatherford off Hwy 5 off Bankhead Hwy				3297-313	32.72028
Parker	3 mi. E of Weatherford off Hwy 180				3297-342	32.76611
Parker	216 Muir Hill Lane	Aledo	76008		3297-313	32.71528
Parker	105 SADDLE BACK	ALEDO	76008		3297-314	32.72167
Parker	same				3297-313	32.71861
Parker	SAME				3297-313	32.73
Parker					3297-313	32.72639
Parker	same				3297-314	32.72861
Parker	1231 OLD ANNETTA RD	ALEDO	76008	PLUGGED	3297-313	32.70555
Parker	1231 OLD ANNETTA RD	ALEDO	76008		3297-313	32.70639
Johnson	12928 FM 4	Granbury	76049		3297-341	32.76861
Parker					3297-313	32.73833
Parker					3297-313	32.725
Parker	Same				3297-342	32.77333
Parker	Same				3297-342	32.78528
Parker	Same				3297-342	32.77111
Parker	1104 PRAIRIE RIDGE DR	ALEDO	76087		3297-314	32.71833
Parker	287 Mikus Rd.	Hudson Oaks	76087		3297-342	32.75083
Parker	3534 Cliffview	Weatherford	76086		3297-342	32.76889
Parker	FM 4	Aledo	76008		3297-313	32.73444
Parker	1170 OLD AIRPORT RD	ALEDO	76008		3297-313	32.70972
Parker					3297-342	32.765
Parker					3297-313	32.72805
Parker	same				3297-313	32.71778
Parker	same				3297-313	32.71917
Parker					3297-342	32.76278
Parker					3297-313	32.72528
Parker	101 SPUR CT	ALEDO	76008		3297-314	32.71972
Parker	1100 WOODBRIDGE CT	WILLOW PARK	76087		3297-313	32.74778
Parker	160 QUAIL RIDGE RD	ALEDO	76008		3297-313	32.72639

LONGDD
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FID	Shape *	TRACKNO	OWN_NAME	OWN_STREET	OWN_CITY	OWN_STATE
44353	Point	45227	KEELING, JIM	160 QUAIL RIDGE RD	ALEDO	TX
44358	Point	45232	KEELING, JIM	160 QUAIL RIDGE RD	ALEDO	TX
44615	Point	45489	JERRY KING	1607 GREEN VIEW CT.	ALEDO	TX
45025	Point	45901	RICK MARSHALL	125 KORTNEY	ALEDO	TX
45580	Point	46458	TONDRE, JOAN AND TERRY	125 WEST GATE	ALEDO	TX
46283	Point	47163	CRAWFORD, JEFF AND SARA	1434 CLAIBORNE	ALEDO	TX
46348	Point	47228	FRANK PRITCHARD	1610 OLD ANNETTA RD.	ALEDO	TX
47026	Point	47907	TONY CONSTRUCTION	206 ARAPAHO RIDGE	WEATHERFORD	TX
47108	Point	47989	TOMMY TALBOT	111 VERNON RD.	ALEDO	TX
47109	Point	47990	GREG SHAW	124 ALEDO POINT DR.	ALEDO	TX
47257	Point	48138	J & F HOMES	155 PRAIRIE RIDGE	ALEDO	TX
47259	Point	48140	J & F HOMES	147 PRAIRIE RIDGE	ALEDO	TX
47260	Point	48141	J & F HOMES	147 PRAIRIE RIDGE	ALEDO	TX
47261	Point	48142	J & F HOMES	147 PRAIRIE RIDGE	ALEDO	TX
48570	Point	49459	Mike Moore	1218 Forrest Park	Weatherford	TX
48598	Point	49489	Charles Pace	217 Lake Hollow Dr	Weatherford	TX
48599	Point	49490	Scott Dally	711 Quail Ridge	Aledo	TX
48797	Point	49689	Steve Hawkins	124 Oak Vista Dr	Wetherford	TX
48892	Point	49784	New Generation Builders	1707 Chapman	Aledo	TX
49370	Point	50262	OAK HILL MOBILE HOMES / BOB DEATON	3909 FORT WORTH HWY	WEATHERFORD	TX
49456	Point	50348	LOPEZ, LAMAR	1844 W DIVISION, SUTE 201	ARLINGTON	TX
49487	Point	50379	GARVEY, RAY	1040 O'NEAL RD	ALEDO	TX
49658	Point	50553	J & F HOMES CUSTOMER	P.O. BOX 1417	ALEDO	TX
50843	Point	51743	R.L Keller	140 shadow creek dr	wetherford	TX
50845	Point	51745	R.L Keller	152 shadow creek dr	wetherford	TX
51114	Point	52015	Gene Jones	Annettte Rd.	Annette	TX
51116	Point	52017	Robby Robertson	2515 White Settlement Rd.	Weatherford	TX
51127	Point	52029	Bill Zinke	3510 Lake Shore Dr.	Weatherford	TX
51129	Point	52033	Peck Custon Homes	923 Squaw Creek Dr	Weatherford	TX
51305	Point	52209	Cloyce Pool	Valley Rd.	Weatherford	TX
51306	Point	52210	Jet Spencer	1219 Woodbridge	Weatherford	TX
51754	Point	52659	TRACY TOMLIN INC CUSTOMER	115 OLD ANNETTA RD	ALEDO	TX
52134	Point	53041	MAACH, GREG	137 WILLOW SPRINGS	ALEDO	TX
53143	Point	54061	GREG SHAW	137 ALEDO POINT	ALEDO	TX
53424	Point	54343	R. L. KELLER	156 SHADOW CREEK RD	ALEDO	TX
53829	Point	54758	RICHARD SHYROC	1405 CHERRY HILL CT.	ALEDO	TX
53973	Point	54907	WEATHERSTONE HOMES	1080 N. O'NEAL AVE.	ANNETTA	TX
54592	Point	55529	Mr. Harris	1595 Crouse	Annetta	TX
54851	Point	55788	Russell Haskell, Hudson Bay Custom Homes	115 Buckingham Ct.	Weatherford	TX
54924	Point	55861	J & F HOMES CUSTOMER	129 PRAIRIE RIDGE	ALEDO	TX
59156	Point	60111	J & H HOMES CUSTOMER	112 PRAIRIE RIDGE	ALEDO	TX
59159	Point	60114	KING, TODD	308 ASPEN CT WEST	ALEDO	TX
59692	Point	60647	Bryan and Amy Yokeley	101 Kristen Dr.	Aledo	TX
59735	Point	60690	KEN BELL	3617 FOUR TREES DR.	WEATHERFORD	TX
59739	Point	60694	BILL SALLEE	192 ARAPAHO	WEATHERFORD	TX
61274	Point	62242	J & F HOMES CUSTOMER	109 SPUR CT	ALEDO	TX
61763	Point	62731	J & F HOMES' CUSTOMER	141 PRAIRIE RIDGE	ALEDO	TX
61765	Point	62733	J & F HOMES' CUSTOMER	141 PRAIRIE RIDGE	ALEDO	TX
61792	Point	62760	PAUL WALTON	3409 FOOT HILLS DR.	WEATHERFORD	TX

OWN_ZIP	DRILL_DATE	HOLE_DEPTH	GRID_NUM	COMPLETION	DRILL_METH	WELL_TYPE	TYPE_WORK
76008	8/9/2004	250	32193	GRAVEL PACKED	AIR ROTARY	DOMESTIC	REPLACEMENT WELL
76008	8/17/2004	250	32193	GRAVEL PACKED	AIR ROTARY	DOMESTIC	REPLACEMENT WELL
76008	7/27/2004	600	32193	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	8/2/2004	200	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	9/21/2004	294	32201	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	9/28/2004	180	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	8/27/2004	150	32196	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	9/1/2004	250	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	9/7/2004	225	32201	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	9/7/2004	300	32201	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	9/16/2004	320	32201	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	9/15/2004	300	32201		AIR HAMMER	DOMESTIC	NEW WELL
76008	9/16/2004	300	32201	GRAVEL PACKED	AIR ROTARY	DOMESTIC	REPLACEMENT WELL
76008	9/17/2004	300	32201	GRAVEL PACKED	AIR ROTARY	DOMESTIC	REPLACEMENT WELL
76087	7/24/2003	200	32119	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76086	7/18/2003	250	32118	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76002	7/21/2003	225	32196	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76086	10/27/2004	200	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	8/27/2004	180	32196	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76086	10/19/2004	250	32118	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76012	11/11/2004	278	32201	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	10/22/2004	198	32195	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	11/8/2004	295	32201	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76086	11/20/2004	200	32201	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76086	11/21/2004	200	32201	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
	12/6/2003	140	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	12/8/2003	340	32117	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
	12/15/2003	570	32118	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
	12/13/2003	180	32119	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
	11/18/2003	160	32118	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
	11/17/2003	260	32119	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	1/19/2005	218	32195	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	1/21/2005	198	32195	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	12/29/2004	300	32201	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	1/21/2005	200	32201	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	1/13/2005	225	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	1/15/2005	200	32195	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	12/8/2004	240	32196	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76086	12/3/2003	180	32118	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	3/11/2005	280	32201	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	5/11/2005	280	32201	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	5/15/2005	280	32201	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	11/5/2003	174	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	4/15/2005	175	32118	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	4/21/2005	250	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	6/9/2005	290	32201	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	6/5/2005	290	32201	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	6/13/2005	290	32201	GRAVEL PACKED	AIR HAMMER	DOMESTIC	REPLACEMENT WELL
76087	5/16/2005	250	32118	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL

COUNTY	WELL_STREE	WELL_CITY	WELL_ZIP	OWN_NUMBER	QUADRANGLE	LATDD
Parker	160 QUAIL RIDGE RD	ALEDO	76008		3297-313	32.72639
Parker	160 QUAIL RIDGE RD	ALEDO	76008		3297-313	32.72639
Parker					3297-313	32.73083
Parker					3297-313	32.72694
Parker	126 PRAIRIE RIDGE	ALEDO	76008		3297-314	32.72167
Parker	1434 CLAIBORNE	ALEDO	76008		3297-313	32.72861
Parker					3297-313	32.69389
Parker					3297-313	32.72444
Parker					3297-314	32.7175
Parker					3297-314	32.72417
Parker	155 PRAIRIE RIDGE	ALEDO	76008		3297-314	32.72361
Parker	147 PRAIRIE RIDGE	ALEDO	76008	#1 PLUGGED	3297-314	32.72305
Parker	147 PRAIRIE RIDGE	ALEDO	76008	#2 PLUGGED	3297-314	32.72278
Parker	147 PRAIRIE RIDGE	ALEDO	76008	#3	3297-314	32.72333
Parker	5 Mi E of Weatherford off Hwy 5 in Forrest Park Est.				3297-342	32.76333
Parker	5 Mi E of Weatherford off Hwy 80 on Lake Hollow Dr				3297-342	32.77444
Parker	6 Mi E of Weatherford off Hwy 5 on Quail Ridge				3297-313	32.68667
Parker	208 oak vista	wetherford	76086	na	3297-313	32.715
Parker	1707 Chapman	Aledo	76008		3297-313	32.69389
Parker					3297-342	32.75167
Parker	____ PRAIRIE CREEK	ALEDO	76008		3297-314	32.72694
Parker	1040 O'NEAL RD	ALEDO	76008		3297-313	32.70639
Parker	111 PRAIRIE RIDGE	ALEDO	76008		3297-314	32.71944
Parker	same				3297-314	32.725
Parker	same				3297-314	32.72583
Parker	Same				3297-313	32.7225
Parker	Same				3297-342	32.78305
Parker	Same				3297-342	32.76139
Parker	Same				3297-342	32.78028
Parker	Same				3297-342	32.78944
Parker	Same				3297-342	32.77917
Parker	115 OLD ANNETTA RD	ALEDO	76008		3297-313	32.70639
Parker	137 WILLOW SPRINGS	ALEDO	76008		3297-313	32.70806
Parker					3297-314	32.72417
Parker	SAME				3297-314	32.72639
Parker					3297-313	32.72917
Parker					3297-313	32.70694
Parker	1595 Crouse	Annetta	76087		3297-313	32.69444
Parker	Clift View	Weatherford	76086		3297-342	32.77778
Parker	129 PRAIRIE RIDGE	ALEDO	76008		3297-314	32.72139
Parker	112 PRAIRIE RIDGE	ALEDO	76008		3297-314	32.71944
Parker	184 BEAR CAT RD	ALEDO	76008	ALEDO SPORTS	3297-314	32.72611
Parker	Same				3297-313	32.74278
Parker					3297-342	32.76805
Parker					3297-313	32.72472
Parker	109 SPUR CT	ALEDO	76008		3297-314	32.72
Parker	141 PRAIRIED RIDGE	ALEDO	76008		3297-314	32.7225
Parker	141 PRAIRIED RIDGE	ALEDO	76008		3297-314	32.72278
Parker					3297-342	32.76667

LONGDD
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-97.66194
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-97.69556

FID	Shape *	TRACKNO	OWN_NAME	OWN_STREET	OWN_CITY	OWN_STATE
62344	Point	63312	Bill Sallee	20 Fossil Hill Rd	Weatherford	TX
63115	Point	64083	ASKEW CUSTOMER	458 QUAIL RIDGE	ALEDO	TX
63116	Point	64084	PEREZ, SALVADOR	1633 CORRIN AVE	BLUE MOUND	TX
63120	Point	64088	RAY, MIKE AND RHONDA	8420 MCDANIEL RD	FT. WORTH	TX
63152	Point	64120	ANTHONY DUAIME	145 OAKCREST DR.	ALEDO	TX
63153	Point	64121	STEVE HAWKINS CUSTOM HOMES	136 OAK CREST HILLS DR.	ALEDO	TX
63296	Point	64264	DOYLE HANLEY	151 CROWN LN.	WILLOW PARK	TX
63832	Point	64800	TONY AARON	101 DENNY CT.	ALEDO	TX
65498	Point	66468	ROY FRENCH LTD LAND CO.	277 TRAILWOOD	WEATHERFORD	TX
65876	Point	66847	FRAC TEC	P.O. BOX 1416	ALEDO	TX
67318	Point	68292	J & F HOMES CUSTOMER	144 PRAIRIE RIDGE	ALEDO	TX
67895	Point	68869	J & F HOMES CUSTOMER	133 PRAIRIE RIDGE	ALEDO	TX
67953	Point	68927	J & F HOMES CUSTOMER	137 PRAIRIE RIDGE	ALEDO	TX
67983	Point	68957	COLLINS, B.J.	147 PRAIRIE RIDGE	ALEDO	TX
68010	Point	68984	MATT PATTERSON	127 KRISTEN DR.	ALEDO	TX
69250	Point	70228	WOODWARD, BILL AND ELLEN	40 BUENA VISTA LANE	ALEDO	TX
69306	Point	70284	THOMPSON, JERRY	429 QUAIL RIDGE	ALEDO	TX
69310	Point	70288	HEFNER, TODD	4141 CENTER POINT RD	ALEDO	TX
70374	Point	71354	ASKEW CUSTOMER	413 CHANDLER	ALEDO	TX
70545	Point	71526	J & F HOMES CUSTOMER	100 SADLE BACK LN	ALEDO	TX
70900	Point	71885	STEVENSON, MAC AND LAUREL	200 CLEAR BRUSH LN	ALEDO	TX
72040	Point	73026	JOHN DONAHUE	227 ARAPAHO RIDGE	WEATHERFORD	TX
73032	Point	74020	EDWARD CANULL	130 CANULL LN.	WEATHERFORD	TX
73033	Point	74021	TOM HACKLEMAN	1319 CLAIBORNE ST.	WEATHERFORD	TX
73214	Point	74202	Ingram Enterprises, L.P.	P. O. Box 1166	Brownwood	TX
73242	Point	74230	Chief Oil & Gas Company	13313 Hwy 287 & 81 N	Ft. Worth	TX
73297	Point	74285	MORGAN RODGER	105 Oakwood	Weatherford	TX
74843	Point	75833	hale	bankhead	weatherford	TX
75250	Point	76240	JOY SEARCY	848 HILLMONT RANCH RD.	ALEDO	TX
75252	Point	76242	GARRY MCKINNEY	1404 OAK LAWN LN.	WEATHERFORD	TX
75787	Point	76778	VERDEYEN, GERALD AND MARTHA	201 OAK VISTA CT	ALEDO	TX
76530	Point	77521	LARRY MCQUIEN	1400 KEENELAND HILL DR.	ALEDO	TX
77710	Point	78705	DAVIS, MISTY	1442 CLAIBORNE LN	ALEDO	TX
77711	Point	78706	MCKITRICK CONSTRUCTION, MATT	6200 WEST FM 4	GODLEY	TX
77714	Point	78709	MCFALL, TERRY	131 ALLIE CT	WEATHERFORD	TX
77716	Point	78711	J & F HOMES CUSTOMER	151 CROOKED STICK	ALEDO	TX
77721	Point	78716	DAVIS, RICHARD	2700 RANCH HOUSE RD	ALEDO	TX
78001	Point	78996	BARKER, BILL	1438 CLAIBORNE	ALEDO	TX
78005	Point	79000	JORDAN, BRETT	1290 AIRPORT RD	ALEDO	TX
78017	Point	79012	TRACY OWNBEY	1429 SARATOGA LN.	ALEDO	TX
78021	Point	79016	HARRIS, HARRY	1020 O'NEAL RD	ALEDO	TX
78831	Point	79827	Bedrock Homes	1803 Ft Worth Hwy, Ste. B	Weatherford	TX
78833	Point	79829	Bedrock Homes	1803 Ft. Worth Hwy, Ste. B	Weatherford	TX
78834	Point	79830	Bedrock Homes	1803 Ft. Worth Hwy, Ste. B	Weatherford	TX
79056	Point	80052	Bill Sallee	218 Arapaho	Weatherford	TX
79061	Point	80057	Bill Sallee	218 Arapaho	Weatherford	TX
80083	Point	81079	BROWN, MARK	1413 CLAIBORNE	ALEDO	TX
80086	Point	81082	TILLMAN, GREG	1308 CLAIBORNE	ALEDO	TX
80546	Point	81542	BILL SALLEE	212 ARAPAHO RIDGE	WEATHERFORD	TX

OWN_ZIP	DRILL_DATE	HOLE_DEPTH	GRID_NUM	COMPLETION	DRILL_METH	WELL_TYPE	TYPE_WORK
76087	12/9/2003	200	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	7/11/2005	260	32193	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76131	7/13/2005	300	32116	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76126	7/18/2005	260	32116	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	6/23/2005	225	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	7/14/2005	225	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76088	6/6/2005	510	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	6/23/2005	200	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	7/6/2005	250	32117	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	8/18/2005	278	32201	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	9/5/2005	300	32201	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	9/22/2005	300	32201	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	9/21/2005	290	32201	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	9/30/2005	300	32201	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	8/11/2005	175	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	10/8/2005	340	32195	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	10/29/2005	200	32193	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	10/27/2005	480	32192	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	10/29/2005	240	32195	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	11/1/2005	280	32201	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	11/26/2005	240	32195	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76087	10/28/2005	500	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	11/10/2005	200	32118	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76086	11/11/2005	175	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76804	9/18/2005	260	32201	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76179	9/22/2005	500	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
	8/14/2004	260	32119	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	2/3/2006	430	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	12/1/2005	175	32193	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76085	12/1/2005	150	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	2/7/2006	241	32192	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	12/29/2005	200	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	3/2/2006	190	32192	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76044	3/6/2006	180	32192	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76087	3/6/2006	180	32192	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	3/10/2006	260	32201	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	3/8/2006	221	32119	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	3/14/2006	180	32192	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	3/15/2006	195	32192	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	1/20/2006	500	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	3/17/2006	190	32195	GRAVEL PACKED	JETTED	DOMESTIC	NEW WELL
76086	3/28/2006	200	32201	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76086	3/28/2006	200	32201	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76086	3/30/2006	200	32201	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	3/11/2004	250	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	3/11/2004	250	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	4/5/2006	160	32192	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	4/11/2006	230	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76086	2/24/2006	250	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL

COUNTY	WELL_STREE	WELL_CITY	WELL_ZIP	OWN_NUMBER	QUADRANGLE	LATDD
Parker	5 Mi SW of Weatherford off I-20				3297-313	32.72111
Parker	458 QUAIL RIDGE	ALEDO	76008		3297-313	32.71694
Parker	217 MOYER	WEATHERFORD	76086		3297-342	32.79222
Parker	RENT HOUSE ON MCDANIEL RD	FT. WORTH	76126	#2	3297-342	32.79222
Parker					3297-313	32.71778
Parker					3297-313	32.7175
Parker					3297-313	32.74917
Parker					3297-313	32.71444
Parker					3297-342	32.78778
Parker	119 NEW ENERGY RD	ALEDO	76008		3297-314	32.72639
Parker	144 PRAIRIE RDIGE	ALEDO	76008		3297-314	32.72278
Parker	133 PRAIRIE RIDGE	ALEDO	76008		3297-314	32.72167
Parker	137 PRAIRIE RIDGE	ALEDO	76008		3297-314	32.72194
Parker	147 PRAIRIE RIDGE	ALEDO	76008	4	3297-314	32.72333
Parker					3297-313	32.71472
Parker	40 BUENA VISTA LANE	ALEDO	76008	2	3297-313	32.69194
Parker	429 QUAIL RIDGE	ALEDO	76008		3297-313	32.7175
Parker	4141 CENTER POINT RD	ALEDO	76008		3297-313	32.72083
Parker	413 CHANDLER	ALEDO	76008		3297-313	32.70389
Parker	100 SADDLE BACK LN	ALEDO	76008		3297-314	32.72111
Parker	1200 CLEAR BRUSH LN	ALEDO	76008		3297-313	32.70028
Palo Pinto					3297-313	32.72555
Parker					3297-342	32.76583
Parker					3297-313	32.73222
Parker	Bear Cat Rd.	Weatherford			3297-314	32.72805
Parker	East Bankhead Hwy	Weatherford	76087		3297-313	32.73861
Parker	Same	Same			3297-342	32.7625
Parker	bankhead	weatherford	76087	0001	3297-313	32.73694
Parker					3297-313	32.71444
Parker					3297-313	32.73139
Parker	201 OAK VISTA CT IN OAKCREST HILL ADDITION	ALEDO	76008		3297-313	32.71861
Parker					3297-313	32.73028
Parker	1442 CLAIBORNE LN	ALEDO	76008		3297-313	32.72805
Parker	6200 WEST FM 4	GODLEY	76044		3297-313	32.73111
Parker	131 ALLIE CT	WEATHERFORD	76087		3297-313	32.73111
Parker	151 CROOKED STICK	ALEDO	76008		3297-314	32.71861
Parker	2650 RANCH HOUSE RD	ALEDO	76008		3297-342	32.76639
Parker	1438 CLAIBORNE	ALEDO	76008		3297-313	32.72833
Parker	1290 AIRPORT RD	ALEDO	76008		3297-313	32.7125
Parker					3297-313	32.72778
Parker	1020 O'NEAL RD	ALEDO	76008		3297-313	32.70583
Parker	128 Crooked Stick	Weatherford	76086		3297-314	32.71972
Parker	109 Vahalla	Weatherford	76086		3297-314	32.72
Parker	108 Crooked Stick	Weatherford	76086		3297-314	32.72111
Parker	3 Mi SE of Weatherford in Arapaho Ridge				3297-313	32.71861
Parker	3 Mi SE of Weatherford in Arapaho Ridge				3297-313	32.72611
Parker	1413 CLAIBORNE	ALEDO	76008		3297-313	32.72861
Parker	1308 CLAIBORNE	ALEDO	76008		3297-313	32.73361
Parker					3297-313	32.72555

LONGDD
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FID	Shape *	TRACKNO	OWN_NAME	OWN_STREET	OWN_CITY	OWN_STATE
80548	Point	81544	BILL SALLEE	212 ARAPAHO RIDGE	WEATHERFORD	TX
80874	Point	81870	MEGAN MCCONNELL	250 QUAIL RIDGE	ALEDO	TX
82102	Point	83098	Mr. Blackwell	139 Allie Ct.	Willow Park	TX
82106	Point	83102	Kenneth Clifton	1750 Chapman Ct.	Aledo	TX
82115	Point	83111	Arrington Oil & Gas	Old Airport Rd.	Weatherford	TX
82640	Point	83637	Bobby Dorn	119 Crooked Stick	Aledo	TX
82641	Point	83638	Bobby Dorn	132 Crooked Stick	Aledo	TX
82642	Point	83639	Bobby Dorn	126 Crooked Stick	Aledo	TX
82647	Point	83644	Bobby Dorn	125 Crooked Stick	Aledo	TX
84310	Point	85309	J & F HOMES	P.O. BOX 1417	ALEDO	TX
84312	Point	85311	ODELL, GREGG	163 ASPIN LOOP	ALEDO	TX
85248	Point	86275	Williams, Chief Oil & Gas Company	13313 Hwy. 287& 81 N	Ft. Worth	TX
85365	Point	86392	Richard Sloan	265 Valley Lane	Weatherford	TX
85372	Point	86399	R.C. Page	232 Arapaho Ridge	Weatherford	TX
85382	Point	86409	Nancy Rapp	1034 Meadowlark	Weatherford	TX
85384	Point	86411	Brenda Jimenez	3610 Ranch House Road	Willow Park	TX
86395	Point	87427	Guy B Wigg	3617 Foothill Dr	Weatherford	TX
86681	Point	87714	SARA MYERS	1338 STEEPLECHASE	WEATHERFORD	TX
87191	Point	88225	TEXAS SUN SHADES	317 N. OAKRIDGE	WEATHERFORD	TX
88039	Point	89077	Bedrock Homes	1803 Ft. Worth Hwy, Ste. B	Weatherford	TX
88436	Point	89475	JOHNNY MAULDEN	1362 FOUR TREES	WEATHERFORD	TX
88440	Point	89479	JEWEL UNDERWOOD	233 ARAPAHO RIDGE	WEATHERFORD	TX
88442	Point	89481	RON SILVA	241 ARAPAHO RIDGE	WEATHERFORD	TX
88443	Point	89482	TOM HAMITER	112 ROCK RIDGE	WEATHERFORD	TX
89887	Point	90939	Bobby Dorn	148 Crooked Stick	Aledo	TX
89987	Point	91039	SENTER	JENKINS RD	ALEDO	TX
89998	Point	91050	MILLER, PAUL	213 HIGHLAND DR	ALEDO	TX
90020	Point	91072	SWINNEY, BILL	84 CROWN RD	WILLOW PARK	TX
91341	Point	92399	Hall	705 N. Oak Ridge Dr.	Weatherford	TX
91402	Point	92460	PHILLIPS, KENNY	1203 CLAIBORNE CT	ALEDO	TX
91428	Point	92486	J & F HOMES	P O BOX 1417	ALEDO	TX
92277	Point	93338	RON DAVIS	1204 CLAIBORNE CT.	ALEDO	TX
92468	Point	93532	SMITH, PAULA	4120 WHITE SETTLEMENT RD	WEATHERFORD	TX
92471	Point	93535	VIDAURRI, ALFRED	692 QUAIL RIDGE	ALEDO	TX
92486	Point	93550	JORDAN, BRET	101 REDTAIL HAWK DR	ALEDO	TX
92488	Point	93552	MCCLELLEN, MATT	P.O. BOX 1690	ALEDO	TX
92489	Point	93553	HOLOVACH, CINDY	1301 CLAIBORNE DR	ALEDO	TX
92520	Point	93584	Bobby Dorn	101 Valhalla	Aledo	TX
92542	Point	93606	JORDAN, BRETT	205 NORTH SPANISH PLUM CT	ALEDO	TX
92630	Point	93694	ALSOP, ANDY	807 SAM BASS CT	WILLOW PARK	TX
93311	Point	94378	Dean Bryant	P.O. Box 117	Mineral Wells	TX
93351	Point	94418	Dennis Robinson	1113 Wood Bridge	Willow Park	TX
93355	Point	94422	Wayne Lee	Oakridge Dr.	Weatherford	TX
93360	Point	94427	Jimmy Hawkins	788 Dill Rd.	Weatherford	TX
93782	Point	94849	Chuck Huddleston	1261 Woodbridge	Weatherford	TX
93909	Point	94977	PAULSON, TRACY	1430 CLAIRBORNE	ALEDO	TX
93960	Point	95028	Bill Bozarth	1275 Fox Hunt	Weatherford	TX
93962	Point	95030	Austin	1261 Fox Rd.	Willow Park	TX
94245	Point	95316	WYLIE KATHY	JENKINS BLUFF	ALEDO	TX

OWN_ZIP	DRILL_DATE	HOLE_DEPTH	GRID_NUM	COMPLETION	DRILL_METH	WELL_TYPE	TYPE_WORK
76086	2/24/2006	250	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	3/2/2006	540	32193	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	3/17/2006	180	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	3/17/2006	180	32196	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	3/31/2006	540	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	4/14/2006	200	32201	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	4/17/2006	200	32201	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	4/17/2006	180	32201	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	4/19/2006	190	32201	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	6/5/2006	350	32127	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	6/1/2006	160	32195	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76179	5/1/2006	480	32118	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76086	8/21/2003	225	32117	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	8/14/2003	525	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	8/11/2003	175	32119	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	8/11/2003	225	32119	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	6/1/2004	160	32118	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76086	5/2/2006	225	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76086	5/25/2006	225	32117	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76088	6/29/2006	200	32201	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76086	6/12/2006	150	32118	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	6/13/2006	475	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	6/13/2006	475	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76086	6/14/2006	250	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	4/19/2006	190	32201	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
	5/10/2004	620	32193	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	7/26/2006	140	32192	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76087	8/1/2006	250	32119	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76087	2/16/2004	200	32117	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	8/31/2006	258	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	8/17/2006	260	32201	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	7/21/2006	200	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	8/29/2006	210	32118	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	9/8/2006	240	32193	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	9/12/2006	220	32192	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	9/12/2006	241	32195	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	9/14/2006	260	32192	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	6/8/2006	200	32127	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	9/11/2006	200	32192	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76087	9/13/2006	240	32193	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76068	9/15/2006	425	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76084	3/8/2004	260	32193	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
	3/12/2004	300	32117	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
	3/13/2004	180	32117	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
	3/10/2004	260	32193	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	9/20/2006	213	32192	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
	3/25/2004	260	32193	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
	3/31/2004	260	32193	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
	4/27/2004	280	32193	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL

COUNTY	WELL_STREE	WELL_CITY	WELL_ZIP	OWN_NUMBER	QUADRANGLE	LATDD
Parker					3297-313	32.72694
Parker					3297-313	32.7225
Parker	139 Allie Ct.	Willow Park	76087		3297-313	32.7325
Parker	1750 Chapman Ct.	Aledo	76008		3297-313	32.69361
Parker	Old Airport Rd.	Weatherford	76087		3297-313	32.71889
Parker	119 Crooked Stick	Aledo	76008		3297-314	32.71944
Parker	132 Crooked Stick	Aledo	76008		3297-314	32.71917
Parker	126 Crooked Stick	Aledo	76008		3297-314	32.72
Parker	125 Crooked Stick	Aledo	76008		3297-314	32.71861
Parker	5957 STACY LN	ALEDO	76008		3297-341	32.76917
Parker	1011 AIRPORT RD	ALEDO	76008		3297-313	32.7075
Parker	Williams Mikkus Rd.	Weatherford	76085		3297-342	32.75917
Parker	5 mi N. of Weatherford off FM 730 on Valley Lane				3297-342	32.76111
Parker	5 mi S. of Weatherford off Airport Road on Arapaho Ridge				3297-313	32.71833
Parker	4 mi E. of Weatherford off Mikus in Forrest Park Estates				3297-342	32.75889
Parker	5 mi W. of Weatherford off I-20 on Mikus				3297-342	32.75778
Parker	Same	Same	76087		3297-342	32.75611
Parker					3297-313	32.73444
Parker					3297-342	32.76222
Parker	137 Shadow Creek	Weatherford	76086		3297-314	32.72
Parker					3297-342	32.76722
Parker					3297-313	32.72611
Parker					3297-313	32.72639
Parker					3297-313	32.71944
Parker	148 Crooked Stick	Aledo	76008		3297-314	32.72139
Parker	SAME	SAME		09425	3297-313	32.72278
Parker	4377 CENTERPOINT RD	ALEDO	76008		3297-313	32.72055
Parker	84 CROWN RD	WILLOW PARK	76087		3297-342	32.76278
Parker	Same			Map	3297-342	32.77861
Parker	1203 CLAIBORNE CT	ALEDO	76008		3297-313	32.73361
Parker	ON CROOKED STICK	ALEDO	76008		3297-314	32.72139
Parker					3297-313	32.73278
Parker	4120 WHITE SETTLEMENT RD	WEATHERFORD	76087		3297-342	32.78583
Parker	692 QUAIL RIDGE	ALEDO	76008		3297-313	32.71111
Parker	101 REDTAIL HAWK DR	ALEDO	76008		3297-313	32.71333
Parker	360 CHANDLER DR	ALEDO	76008		3297-313	32.70444
Parker	1301 CLAIBORNE DR	ALEDO	76008		3297-313	32.73472
Parker	101 Valhalla	Aledo	76008		3297-341	32.77055
Parker	205 NORTH SPANISH PLUM CT	ALEDO	76008		3297-313	32.71389
Parker	807 SAM BASS CT	WEATHERFORD	76087		3297-313	32.7475
Parker	Vineyard Rd.	Anetta North	76008		3297-313	32.73444
Parker	Same				3297-313	32.74917
Parker	Same				3297-342	32.77555
Parker	Same				3297-342	32.77555
Parker	Same				3297-313	32.74917
Parker	1430 CLAIBORNE	ALEDO	76008		3297-313	32.72889
Parker	Same				3297-313	32.74833
Parker	Same				3297-313	32.74944
Parker	SAME	SAME			3297-313	32.73333

LONGDD
-97.74111
-97.665
-97.6825
-97.65583
-97.73028
-97.61694
-97.61917
-97.61778
-97.62028
-97.60528
-97.67639
-97.67278
-97.74111
-97.69444
-97.65611
-97.63778
-97.69778
-97.675
-97.71167
-97.61861
-97.68722
-97.74389
-97.74444
-97.69667
-97.62167
-97.65417
-97.68444
-97.65611
-97.72028
-97.66972
-97.61667
-97.67
-97.67722
-97.64361
-97.70194
-97.68806
-97.67
-97.62167
-97.7
-97.64222
-97.72611
-97.63333
-97.71944
-97.71944
-97.63028
-97.67528
-97.62611
-97.62639
-97.65417

FID	Shape *	TRACKNO	OWN_NAME	OWN_STREET	OWN_CITY	OWN_STATE
94268	Point	95339	Wess Homes	1860 Old Annetta Rd.	Annetta	TX
94333	Point	95404	CARLEN, BRIAN	214 HEMPHILL ST, SUITE B	FT. WORTH	TX
96091	Point	97175	MATT PATTERSON HOMES	385 TRAILWOOD DR.	WEATHERFORD	TX
96092	Point	97176	MATT PATTERSON HOMES	371 TRAILWOOD DR.	WEATHERFORD	TX
96546	Point	97632	LEE, DAN AND ELLEN	4505 GREENBROOK PLACE #29	FORT WORTH	TX
97128	Point	98214	BUDDY MARTIN	1151 UNDERWOOD	ALEDO	TX
97522	Point	98610	JOHN THOMPSON	2346 OLD ANNETTA RD.	ALEDO	TX
97876	Point	98968	MCCULLOUGH, RICHARD	124 CANYON RIDGE	ALEDO	TX
98393	Point	99486	CASHION, JAMIE	1858 OLD ANNETTA RD	ALEDO	TX
99045	Point	100141	LAKES OF ALEDO L.P.	3495 ANNETTA CENTERPOINT RD	ALEDO	TX
99047	Point	100143	LAKES OF ALEDO L.P.	3495 ANNETTA CENTERPOINT RD	ALEDO	TX
99247	Point	100343	GARY TIMBERS	2609 FT. WORTH HWY 180	WEATHERFORD	TX
99327	Point	100423	PHILLIPS CUSTOMER, BRITT	176 BEARCAT RD	ALEDO	TX
99433	Point	100531	GEMINI HOMES CUSTOMER	116 CANYON RIDGE	ALEDO	TX
99724	Point	100824	FRONTIER CITY BUSINESS PARK	2602 FORT WORTH HWY	WEATHERFORD	TX
100347	Point	101450	Thurman Homes	150 Deercreek Rd.	Annetta	TX
100350	Point	101453	Thurman Homes	150 Deercreek Rd.	Annetta	TX
100442	Point	101548	GREG SHAW	WOODLAND HILLS	WEATHERFORD	TX
100979	Point	102090	Montex Blg.	Friendship Rd.	Weatherford	TX
100980	Point	102091	Steve Dugan	3605 Lakeshore Dr.	Weatherford	TX
101598	Point	102711	Jimmy Floyd	2777 Azle Hwy	Weatherford	TX
103480	Point	104609	Dave Blode	102 Chisholm Hills Rd	Weatrherford	TX
103658	Point	104787	Alan & Cyndi Norman	1200 Steeple Chase	Aledo	TX
103895	Point	105025	RED OAK RANCH	#1 AIRPROT ROAD	WEATHERFORD	TX
104298	Point	105428	MK Homes	238 King Ranch Court	Ft. Worth	TX
104956	Point	106094	Ken Davis	3538 Four Trees	Weatherford	TX
105142	Point	106280	Fredrick Munier	3420 Four Trees Drive	Weatherford	TX
105295	Point	106433	Clay Burne	4411 Cimmaran Trail	Granbury	TX
105300	Point	106438	Debbie Kerrigan	1269 Foxhunt Trail	Williow Park	TX
105678	Point	106818	GLOVER, ANDY	855 SYLVIN CREEK	WEATHERFORD	TX
106047	Point	107188	CDC Construction	Lot #8 Canyon Ridge Drive	Aledo	TX
106287	Point	107428	Ryan Cowley	1241 Forest Park Drive	Weatherford	TX
106300	Point	107441	Kirk Custom Homes	440 Pecan Drive	Aledo	TX
106653	Point	107801	Steve Wise	1111 Redbud	Annetta	TX
106711	Point	107859	Kirk Custom Homes	440 Pecan Drive	Aledo	TX
106716	Point	107864	William Arvesen	5715 Congressional Drive	Arlington	TX
107355	Point	108509	Crauch	Buck Dobbs Road	Weatherford	TX
107360	Point	108514	Rutledge	1638 Meadow Lark	Weatherford	TX
107489	Point	108644	Manlie Construction	100 Prairie Drive	Aledo	TX
107549	Point	108704	JOHN POZLANY	1741 WOODLAND CT.	WEATHERFORD	TX
107566	Point	108721	MIKE CASCINO	117 CANUL LANE	WEATHERFORD	TX
107579	Point	108734	LARRY LARKINS	142 KORTNEY RD.	WEATHERFORD	TX
107581	Point	108736	S&B CONSTRUCTION	275 FALCON RIDGE	ALEDO	TX
108350	Point	109511	Jeff Carrillo	Center Point Road	Weatherford	TX
109702	Point	110873	TRACY TOMLIN CUSTOMER	100 BUCHANAN CT	ALEDO	TX
109703	Point	110874	TRACY TOMLIN CUSTOMER	103 BUCHANAN CT	ALEDO	TX
109707	Point	110878	J & F HOMES CUSTOMER	100 SHADOW CREEK	ALEDO	TX
109865	Point	111036	Bob Brown	5076 FM 5	Aledo	TX
109980	Point	111152	Johnny Paul Music	10450 E. Bankhead Highway	Aledo	TX

OWN_ZIP	DRILL_DATE	HOLE_DEPTH	GRID_NUM	COMPLETION	DRILL_METH	WELL_TYPE	TYPE_WORK
76087	6/24/2006	200	32196	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76104	9/29/2006	240	32196	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76086	9/5/2006	210	32117	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76086	9/5/2006	210	32117	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76116	10/25/2006	370	32127	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	9/13/2006	175	32196	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	9/20/2006	550	32196	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	10/31/2006	260	32192	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	11/13/2006	230	32196	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	12/6/2006	155	32196	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	12/6/2006	155	32196	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76087	10/11/2006	175	32117	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	12/7/2006	260	32201	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	12/6/2006	255	32195	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76087	11/14/2006	200	32117	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	11/19/2006	300	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	11/20/2006	300	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76086	11/20/2006	220	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76085	11/6/2006	220	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	11/7/2006	250	32118	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	11/11/2006	260	32114	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	12/27/2006	400	32127	GRAVEL PACKED	AIR ROTARY	DOMESTIC	REPLACEMENT WELL
76008	4/13/2005	220	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76086	12/11/2006	575	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76108	1/29/2007	220	32117	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76086	11/8/2003	180	32118	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	3/11/2005	270	32118	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76049	8/16/2004	259	32193	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	9/14/2004	279	32193	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	3/5/2007	380	32127	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	11/24/2004	210	32195	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	4/29/2005	180	32118	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	4/21/2005	260	32195	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	2/26/2007	180	32195	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	6/27/2005	180	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76018	6/28/2005	270	32118	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76086	4/8/2005	140	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76086	4/9/2005	200	32118	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	4/22/2005	260	32201	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	2/6/2007	225	32193	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	2/8/2007	500	32118	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	2/27/2007	575	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	2/28/2007	560	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
	7/26/2004	120	32117	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	4/22/2007	180	32196	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	4/22/2007	180	32196	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	4/11/2007	260	32201	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	3/14/2005	240	32195	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	2/11/2005	210	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL

COUNTY	WELL_STREE	WELL_CITY	WELL_ZIP	OWN_NUMBER	QUADRANGLE	LATDD
Parker	1860 Old Annetta Rd.	Annetta	76087		3297-313	32.69361
Parker	252 BRIARWOOD LN	ALEDO	76008		3297-313	32.68889
Parker					3297-342	32.78972
Parker					3297-342	32.78917
Parker	136 JOHN CHISOLM RD	WEATHERFORD	76087		3297-341	32.78083
Parker					3297-313	32.70194
Parker					3297-313	32.68917
Parker	124 CANYON RIDGE	ALEDO	76008		3297-313	32.71389
Parker	1858 OLD ANNETTA RD	ALEDO	76008		3297-313	32.69472
Parker	105 LAKES DR	ALEDO	76008	1	3297-313	32.705
Parker	113 LAKES DR	ALEDO	76008	2	3297-313	32.70528
Parker					3297-342	32.75861
Parker	176 BEARCAT RD	ALEDO	76008		3297-314	32.72833
Parker	116 CANYON RIDGE	ALEDO	76008		3297-313	32.69722
Parker					3297-342	32.75639
Parker	112 Scenic View	Weatherford	76008		3297-313	32.71278
Parker	221 Scenic View	Weatherford	76008		3297-313	32.71278
Parker					3297-313	32.72889
Parker	Friendship Rd. Lot 18	Weatherford	76085	6	3297-313	32.72528
Parker	3605 Lakeshore Dr.	Weatherford	76087	1	3297-342	32.76389
Parker	2777 Azle Hwy	Weatherford	76087	1	3297-342	32.795
Parker	102 Chisholm Hills Rd.	Weatherford	76087	2	3297-341	32.76694
Parker	1200 Steeple Chase	Aledo	76008		3297-313	32.73778
Parker			76086		3297-313	32.71694
Parker	730 Sandstone Estate	Weatherford	76086		3297-342	32.78611
Parker	3538 Four Trees	Weatherford	76086		3297-342	32.77944
Parker	3420 Four Trees Drive	Weatherford	76087		3297-342	32.75417
Parker	4411 Cimmaran Trail	Granbury	76049		3297-313	32.72861
Parker	1269 Foxhunt Trail	Willow Park	76087		3297-313	32.74667
Parker	___ JOHN CHISHOLM RD	WEATHERFORD	76087		3297-341	32.78055
Parker	Lot #8 Canyon Ridge Drive	Aledo	76008		3297-313	32.69778
Parker	1241 Forest Park Drive	Weatherford	76087		3297-342	32.7625
Parker	1/2 Mile South of Anneta	Anneta	76008		3297-313	32.68806
Parker	1111 Redbud	Annetta	76087		3297-313	32.69889
Parker	123 Allie Court	Aledo	76008		3297-313	32.73111
Parker	West of White Settlement	White Settlement	76108		3297-342	32.75972
Parker	Buck Dobbs Road	Weatherford	76086		3297-313	32.73361
Parker	1638 Meadow Lark	Weatherford	76086		3297-342	32.77083
Parker	100 Prairie Drive	Aledo	76008		3297-314	32.71861
Parker					3297-313	32.73667
Parker					3297-342	32.765
Parker					3297-313	32.72917
Parker					3297-313	32.72111
Parker	Center Point Road	Weatherford			3297-342	32.75306
Parker	100 BUCHANAN CT	ALEDO	76008	#1	3297-313	32.70722
Parker	103 BUCHANAN CT	ALEDO	76008	2	3297-313	32.70722
Parker	100 SHADOW CREEK	ALEDO	76008		3297-314	32.72333
Parker	5076 FM 5	Aledo	76008		3297-313	32.68972
Parker	10450 E. Bankhead Highway	Aledo	76008		3297-313	32.73833

LONGDD
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-97.68028

FID	Shape *	TRACKNO	OWN_NAME	OWN_STREET	OWN_CITY	OWN_STATE
111907	Point	113091	J & HOMES	P.O. BOX 1417	ALEDO	TX
111922	Point	113109	PAT MARTIN	CROWN RD	WEATHERFORD	TX
112885	Point	114084	J.W. RICHARDS	3957 CREST RD.	WEATHERFORD	TX
113440	Point	114639	JERNIGAN, KEITH	122 DEVON CT	ALEDO	TX
115522	Point	116735	JOHN ROGERS	101 SHADYWOOD CT.	WEATHERFORD	TX
116263	Point	117490	JB HOMES	P.O. BOX 126172	FORT WORTH	TX
116387	Point	117615	JB HOMES	P.O. BOX 126172	FORT WORTH	TX
116480	Point	117708	Sid Cruz	3717 Coronado Ct.	Weatherford	TX
116503	Point	117731	Sid Cruz	3717 Coronado Ct.	Weatherford	TX
116568	Point	117796	Jerry Coffee	205 Timber Trail	Weatherford	TX
116571	Point	117799	Bob Braur	1190 Fox Hunt Trail	Willow Park	TX
116578	Point	117806	Michelle Dunsmore	1161 Fox Hunt Tr.	Willow Park	TX
116582	Point	117810	Crosstex Energy Ser., L.P.	Pearson Ranch Rd.	Weatherford	TX
117213	Point	118452	SILVA	1222 FOX RD.	WEATHERFORD	TX
117388	Point	118628	BOBBY LANKFORD	3100 E. BANKHEAD	WEATHERFORD	TX
117403	Point	118643	FLOWERS CONSTRUCTION	205 ACORN CT.	WEATHERFORD	TX
117410	Point	118650	FLOWERS CONSTRUCTION	213 ACORN CT.	WEATHERFORD	TX
117419	Point	118659	MARK TAYLOR	1315 SARATOGA CT.	WEATHERFORD	TX
117427	Point	118667	ANNETTA CEMENTARY	ANNETTA RD.	ANNETTA	TX
117465	Point	118705	BILL CLEMENTS	ARRAPAHO RIDGE	WEATHERFORD	TX
117533	Point	118774	NADBAU	112 WOODLAND HILLS	ALEDO	TX
117599	Point	118840	JIM PERKINS	QUAIL RIDGE	ANNETTA	TX
117745	Point	118986	RICHARD ROCKWELL	1018 FOREST PARK RD	WEATHERFORD	TX
118055	Point	119297	Pinnacle Plumbing	500 Jenkins Rd.	Aledo	TX
118095	Point	119337	Mike Sands	Old Annetta and Dixon Road	Weatherford	TX
118096	Point	119338	Darby Patrick	307 Fairway	Willow Park	TX
118840	Point	120099	Dennis Gendron	115 Windmill Rd.	Aledo	TX
120222	Point	121487	ROBERT DAVIS	115 DUSTIN CT.	WEATHERFORD	TX
120344	Point	121609	BARKER, DUSTY	1334 STEEPLECHASE	ALEDO	TX
121863	Point	123140	James Skipper	112 Timber Ct.	Aledo	TX
122136	Point	123413	MER. CONSTRUTION	OAK VIEW ESTATES	WEATHERFORD	TX
122294	Point	123571	Pat & Thomas Hodge	2510 Haley	Weatherford	TX
122663	Point	123944	TONY AARON	1005 O'NEAL / FM 5	WEATHERFORD	TX
122708	Point	123990	Mc Clain	1209 Fox Hunt	Willow Park	TX
122709	Point	123991	John Plummer	1154 Fox Hunt	Willow Park	TX
122930	Point	124213	MARK DEKEYSER	2537 ELK HOLLOW LN	WEATHERFORD	TX
122937	Point	124220	BOB NUTTALL	208 WOODCREST DR	WEATHERFORD	TX
124888	Point	126208	Ritz, Frederic	205 N Rambling Fork St.	Weatherford	TX
124905	Point	126225	Doran, Bobby	704 Crooked Stick	Aledo	TX
125071	Point	126235	Putman, Lance	4333 Airport Rd.	Aledo	TX
125080	Point	126244	TRACY HOLMES	525 QUAIL RIDGE	ALEDO	TX
126142	Point	127474	Beth Phelan	2200 Camelot	Willow Park	TX
128264	Point	129614	GEORGE FRY	3312 TRAILWOOD	WEATHERFORD	TX
128615	Point	129974	Crumpler, Shayne	1243 Woodbridge Crt.	Willow Park	TX
129297	Point	130658	Threta Ann Davis	3707 W. FM Road 5	Aledo	TX
129563	Point	130925	O'Zee, Kenny	115 Acorn	Annetta	TX
130060	Point	131426	DIRK HOSSINGER	1416 OAK LAWN	WEATHERFOR	TX
130726	Point	132095	BRANDON FLOWERS	SHADOW CREEK LOT # 3	WEATHERFORD	TX
131814	Point	133188	MICHAEL THOMPSON	3602 FOOT HILLS	WEATHERFORD	TX

OWN_ZIP	DRILL_DATE	HOLE_DEPTH	GRID_NUM	COMPLETION	DRILL_METH	WELL_TYPE	TYPE_WORK
76008	5/14/2007	260	32201	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76086	3/1/2007	200	32118	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	4/2/2007	150	32118	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	6/11/2007	260	32192	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76086	5/7/2007	175	32118	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76126	7/11/2007	220	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76126	7/12/2007	200	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	6/25/2007	260	32119	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	6/25/2007	260	32119	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
	6/16/2007	260	32118	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
	6/18/2007	260	32201	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
	6/20/2007	260	32201	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	6/22/2007	600	32115	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76088	7/31/2007	260	32201	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
	7/5/2007	480	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
	7/11/2007	240	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
	7/12/2007	240	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
	7/17/2007	200	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
	7/23/2007	160	32195	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
	7/16/2007	260	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	7/16/2007	250	32196	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
	8/2/2007	600	32193	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76086	7/10/2007	200	32118	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	8/7/2007	180	32193	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
	7/8/2004	140	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
	7/9/2004	240	32119	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	8/9/2007	200	32195	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
	8/29/2007	220	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	8/22/2007	260	32192	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	9/18/2007	200	32195	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
	9/28/2007	520	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	10/2/2007	250	32117	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76086	8/13/2007	150	32195	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
	10/6/2007	260	32201	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
	10/5/2007	280	32201	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76086	8/24/2007	175	32114	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76086	8/29/2007	175	32117	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	8/16/2007	212	32117	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	8/4/2007	220	32201	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	7/23/2007	460	32191	GRAVEL PACKED	MUD ROTARY	DOMESTIC	NEW WELL
76005	8/28/2007	560	32193	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	9/25/2007	200	32193	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76088	10/19/2007	225	32117	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	10/25/2007	317	32196	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	12/20/2007	245	32195	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	10/8/2007	197	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
	1/11/2008	200	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
	1/16/2008	200	32201	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
	1/30/2008	200	32118	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL

COUNTY	WELL_STREE	WELL_CITY	WELL_ZIP	OWN_NUMBER	QUADRANGLE	LATDD
Parker	107 CROOKED STICK	ALEDO	76008		3297-314	32.72083
Parker					3297-342	32.75222
Parker					3297-342	32.78167
Parker	122 DEVON CT	ALEDO	76008		3297-313	32.73528
Parker					3297-342	32.76055
Parker	118 ACORN CT.	ALEDO	76008		3297-313	32.71667
Parker	119 ACORN CT.	ALEDO	76008		3297-313	32.71694
Parker	3717 Coronado Ct.	Weatherford	76087	1	3297-342	32.76694
Parker	3717 Coronado Ct.	Weatherford	76087	1	3297-342	32.76694
Parker	205 Timber Trail	Weatherfoed		1	3297-342	32.75028
Parker	1190 Fox Hunt Trail	Weatherford		1	3297-314	32.73361
Parker	1161 Fox Hunt Tr.	Willow Park		1	3297-314	32.73361
Parker	Pearson Ranch Rd.	Weatherford	76087	1	3297-342	32.8
Parker	1222 FOX RD.	WEATHERFORD	76088	1	3297-314	32.73361
Parker	3100 E. BANKHEAD	WEATHERFORD		1	3297-313	32.73333
Parker	205 ACORN CT.	WEATHERFORD			3297-313	32.71667
Parker	213 ACORN	WEATHERFORD			3297-313	32.71667
Parker	1315 SARATOGA	WEATHERFORD			3297-313	32.71694
Parker	ANNETTA RD.	ANNETTA			3297-313	32.70028
Parker	ARRAPAHO RIDGE	WEATHERFORD			3297-313	32.71667
Parker	112 WOODLAND HILLS	ALEDO	76008		3297-313	32.69278
Parker	QUAIL RIDGE	ANNETTA			3297-313	32.71667
Parker					3297-342	32.75972
Parker	500 Jenkins Rd.	Aledo	76008	2	3297-313	32.71667
Parker	Old Annetta and Dixon Road	Weatherford			3297-313	32.725
Parker	307 Fairway	Willow Park			3297-342	32.76556
Parker	115 Windmill Rd.	Aledo	76008	1	3297-313	32.7
Parker	115 DUSTIN CT.	WEATHERFORD			3297-313	32.71694
Parker	1334 STEEPLECHASE IN STONE CREEK FARM	ALEDO	76008		3297-313	32.73444
Parker	112 Timber Ct.	Aledo	76008	1	3297-313	32.7
Parker	OAK VIEW ESTATES	WEATHERFORD			3297-313	32.71694
Parker	2510 Hayley	Weatherford	76087	1	3297-342	32.78333
Parker					3297-313	32.70555
Parker	1209 Fox Hunt	Willow Park			3297-314	32.73583
Parker	1154 Fox Hunt	Willow Park			3297-314	32.73583
Parker					3297-342	32.79167
Parker					3297-342	32.77055
Parker	205 N Rambling Fork St.	Weatherford	76087		3297-342	32.78278
Parker	704 Crooked Stick	Weatherford	76008		3297-314	32.72083
Parker	4333 Airport Rd.	Aledo	76008		3297-313	32.71861
Parker					3297-313	32.71528
Parker	3300 Camelot	Willow Park	76087		3297-313	32.74972
Parker					3297-342	32.78972
Parker	1243 Woodbridge Crt.	Willow Park	76087	Well Log #2100	3297-313	32.69833
Parker	3707 W. FM Road 5	Aledo	76008		3297-313	32.69389
Parker	115 Acorn	Annetta	76008		3297-313	32.72028
Parker	1416 OAK LAWN	WEATHERFORD			3297-313	32.71694
Parker	SHADOW CREEK LOT # 3	WEATHERFORD			3297-314	32.71667
Parker	3602 FOOT HILLS	WEATHERFORD			3297-342	32.76667

LONGDD
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FID	Shape *	TRACKNO	OWN_NAME	OWN_STREET	OWN_CITY	OWN_STATE
132435	Point	133818	PHILLIPS, BRITT	P.O BOX 92	ALEDO	TX
132727	Point	134116	RODGER BARKER	FOOT HILLS	WEATHERFORD	TX
133232	Point	134624	Joe Coss	606 Bryan Street	Weatherford	TX
133318	Point	134710	Fred La Pointe	1404 Saratoga Lane	Aledo	TX
133799	Point	135191	Richard Callaway	121 Addison Ct	Hudson Oaks	TX
135077	Point	136473	STEVE CARROL	102 ROCK RIDGE CT.	WEATHERFORD	TX
135581	Point	136981	STEVE FISHER	FOREST PARK ADD.	WEATHERFORD	TX
136192	Point	137602	Bryan Yoakley	P.O. BOX 272	Aledo	TX
136391	Point	137802	TOMLIN, TRACY	163 SOLANO	ALEDO	TX
136839	Point	138263	Classic Custom Homes	216 Acorn Ct.	Aledo	TX
136847	Point	138271	Kenny DZee	101 Oakcrest	Aledo	TX
138606	Point	140040	APEX HOMES	107 JENKINS BLUFF	ALEDO	TX
140383	Point	141837	Cyrstal Creek Homes	160 Shady Creek	Aledo	TX
141154	Point	142630	BILL SALLEE	100 BROOK ARBOR CT.	WEATHERFORD	TX
141338	Point	142816	Billy Otis	134 Saint Andrews Lane	Aledo	TX
142071	Point	143557	RED OAK RANCH	740 DIXON RD.	WEATHERFORD	TX
142074	Point	143560	RED OAK RANCH	740 DIXON RD.	WEATHERFORD	TX
145196	Point	146723	FINLEY CUSTOM HOMES	252 SANDSTONE ESTATES	WEATHERFORD	TX
146779	Point	148399	Stoakes, D.	409 Queensway	Willow Park	TX
148120	Point	149751	Kenny Ozee	124 Kristen	Annetta	TX
148432	Point	150065	ROBERT ANDERSON	3618 WHITE SETTLEMENT RD.	WEATHERFORD	TX
148658	Point	150296	Ozee, Kenny	110 Acorn	Annetta	TX
148687	Point	150325	RICHARD E. LANE	104 ST. ANDREWS LN	ALEDO	TX
148688	Point	150326	KRIS BROOKS	152 ST ANDREWS LN	ALEDO	TX
148689	Point	150327	STEVE LEDGERWOOD	128 LINKS LN	ALEDO	TX
148732	Point	150370	Venture Homes	397 Trailwood	Weatherford	TX
148758	Point	150403	Huffman, Mark	108 Acorn	Annetta	TX
148770	Point	150415	Moncrief, Rick	143 Atlee	Annetta	TX
148780	Point	150425	J & M Homes/Mark Huffman	213 Scout Trail	Annetta	TX
148942	Point	150587	Kenmark Homes	159 Crooked Stick	Aledo	TX
148968	Point	150613	Amos, Kenny	130 Hilltop Terrace	Weatherford	TX
149053	Point	150699	Kenny Ozee	136 Croked Stick	Aledo	TX
149054	Point	150700	Ozee, Kenny	116 Crooked Stick	Aledo	TX
149057	Point	150703	Ozee, Kenny	112 Crooked Stick	Aledo	TX
149175	Point	150822	Kelley, Timothy Hampton	Lot 1 Canyon Ridge Trail	Annetta	TX
149177	Point	150824	Leeper, Mark & Paula	3518 Cliff View Loop	Weatherford	TX
149178	Point	150825	Classique Custom Homes	111 Acorn	Annetta	TX
149186	Point	150833	Classique Custom Homes	111 Acorn	Annetta	TX
149298	Point	150945	Ozee, Kenny	135 Crooked Stick	Aledo	TX
149306	Point	150953	Ozee, Kenny	124 Crooked Stick	Aledo	TX
149393	Point	151040	CAMPBELL, LAURA	760 JENKINS RD	ALEDO	TX
149553	Point	151200	NORMAN, JAMES	380 ANNETTA RD	WEATHERFORD	TX
149573	Point	151220	Horseshoe Builders	Lot 2 Block 1 Canyon Ridge Est	Annetta	TX
149578	Point	151225	Thurman, Clint	1204 Steeplechase Ct.	Aledo	TX
149607	Point	151254	J & M Homes/Mark Huffman	122 Acorn	Aledo	TX
149716	Point	151365	Adams, David	230 Terrace Bluff	Annetta	TX
150344	Point	152018	Charles Laughley	1593 Hunter Glen	Aledo	TX
150345	Point	152019	Kenny Ozee	109 Ruth Court	Annetta	TX
150347	Point	152021	Kenny Ozee	381 Creek Bend	Annetta	TX

OWN_ZIP	DRILL_DATE	HOLE_DEPTH	GRID_NUM	COMPLETION	DRILL_METH	WELL_TYPE	TYPE_WORK
76008	1/7/2008	280	32201	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
	2/11/2008	260	32118	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76086	7/17/2007	240	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	7/30/2007	220	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	9/19/2007	160	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
	2/27/2008	560	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
	3/14/2008	200	32118	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	3/21/2008	147	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	2/27/2008	252	32195	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	9/21/2006	197	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	9/21/2006	197	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	2/11/2008	220	32193	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	5/9/2008	220	32201	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	5/8/2008	500	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	3/27/2008	200	32196	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76086	4/1/2008	520	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76086	4/3/2008	500	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
	7/16/2008	280	32117	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76086	2/24/2007	280	32119	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	10/3/2005	147	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	6/17/2008	175	32118	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	10/29/2007	172	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	7/10/2008	150	32196	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	7/14/2008	175	32196	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	7/14/2008	100	32196	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76085	5/23/2008	197	32117	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	5/29/2008	197	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	6/2/2008	172	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	6/9/2008	122	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	5/10/2007	197	32201	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76088	6/1/2007	147	32118	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	2/6/2007	199	32201	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	2/5/2007	198	32201	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	2/5/2007	197	32201	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	9/21/2007	197	32195	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	9/21/2007	190	32118	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	10/1/2007	197	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	10/1/2007	122	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	8/23/2006	191	32201	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	8/23/2006	197	32201	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	7/17/2008	220	32193	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76086	8/1/2008	260	32192	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	5/2/2007	197	32195	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	5/4/2007	197	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	4/18/2007	197	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	3/5/2008	197	32196	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	7/21/2005	200	32193	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	7/21/2005	96	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	7/22/2005	122	32195	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL

COUNTY	WELL_STREE	WELL_CITY	WELL_ZIP	OWN_NUMBER	QUADRANGLE	LATDD
Parker	600 BEARCAT RD	ALEDO	76008		3297-314	32.72333
Parker	FOOT HILLS	WEATHERFORD			3297-342	32.76667
Parker	801 Newell	Hudson Oaks			3297-313	32.74611
Parker	1404 Saratoga Lane	Aledo	76008		3297-313	32.72972
Parker	121 Addison Ct.	Hudson Oaks	76087		3297-313	32.74778
Parker	102 ROCK RIDGE CT.	WEATHERFORD			3297-313	32.71667
Parker	FOREST PARK ADD.	WEATHERFORD			3297-342	32.75028
Parker	218 Scout Trail	Aledo	76008	1	3297-313	32.71444
Parker	163 SOLANO IN BELLA VISTA	ALEDO	76008		3297-313	32.68278
Parker	same				3297-313	32.72444
Parker	same				3297-313	32.72167
Parker					3297-313	32.72889
Parker	160 Shady Creek	Aledo	76008		3297-314	32.71667
Parker					3297-313	32.72833
Parker	134 Saint Andrews Lane	Aledo	76008		3297-313	32.69583
Parker					3297-313	32.72333
Parker					3297-313	32.72194
Parker	252 SANDSTONE ESTATES	WEATHERFORD			3297-342	32.78333
Parker				1	3297-342	32.75056
Parker	124 Kristen	Annetta	76008		3297-313	32.72583
Parker					3297-342	32.78556
Parker	110 Coleman	Annetta	76008		3297-313	32.71694
Parker					3297-313	32.69389
Parker					3297-313	32.69639
Parker					3297-313	32.69167
Parker	379 Trailwood	Weahterford	76085		3297-342	32.78305
Parker	108 Acorn	Annetta	76008		3297-313	32.72167
Parker	143 Atlee	Annetta	76008		3297-313	32.72083
Parker	213 Scout Trail	Annetta	76008		3297-313	32.71667
Parker	159 Crooked Stick	Aledo	76008		3297-314	32.71611
Parker	130 Hilltop Terrace	Weatherford	76088		3297-342	32.76028
Parker	136 Crooked Stick	Aledo	76008		3297-314	32.71861
Parker	116 Crooked Stick	Aledo	76008		3297-314	32.71861
Parker	112 Crooked Stick	Aledo	76008		3297-314	32.72167
Parker	Lot 1 Canyon ridge Trail	Annetta	76008		3297-313	32.695
Parker	3518 Cliff View Loop	Weatherford	76087		3297-342	32.77278
Parker	111 Acorn	Annetta	76008		3297-313	32.715
Parker	111 Acorn	Annetta	76008		3297-313	32.71667
Parker	135 Crooked Stick	Aledo	76008		3297-314	32.71972
Parker	124 Crooked Stick	Aledo	76008		3297-314	32.72083
Parker	760 JENKINS RD	ALEDO	76008		3297-313	32.71917
Parker	380 ANNETTA RD	WEATHERFORD	76086		3297-313	32.73972
Parker	Lot 2 Block 1 Canyon Ridge Est.	Annetta	76008		3297-313	32.69778
Parker	1204 Steeplechase Ct.	Aledo	76008		3297-313	32.73167
Parker	122 Acorn	Aledo	76008		3297-313	32.715
Parker	230 Terrace Bluff	Annetta	76008		3297-313	32.68972
Parker	1593 Hunter Glen	Aledo	76008		3297-313	32.72917
Parker	109 Ruth Court	Annetta	76008		3297-313	32.71278
Parker	381 Creek Bend	Annetta	76008		3297-313	32.70528

LONGDD
-97.61444
-97.68333
-97.70806
-97.66917
-97.68528
-97.73361
-97.66667
-97.69444
-97.67944
-97.72111
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-97.74139
-97.65083
-97.72528
-97.72111
-97.71694
-97.65139
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-97.67083
-97.70472
-97.65167
-97.65028
-97.64083
-97.72639
-97.6875
-97.68889
-97.72055
-97.61444
-97.67944
-97.61361
-97.61389
-97.61639
-97.67917
-97.67083
-97.69611
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-97.61028
-97.61194
-97.63972
-97.67305
-97.67861
-97.67028
-97.72028
-97.64389
-97.65806
-97.69806
-97.68167

FID	Shape *	TRACKNO	OWN_NAME	OWN_STREET	OWN_CITY	OWN_STATE
150361	Point	152009	J & M Homes / Greg Moore	188 Muir Hill Drive	Annetta	TX
150365	Point	152013	J & M Homes / Mark Hoffman	500 Muir Hill Court	Annetta	TX
150834	Point	152523	Classique Homes	109 Denny Court	Annetta	TX
150835	Point	152524	Mark Huffman	Lot #6 Muir Hill	Annetta	TX
150866	Point	152522	Kenny Ozee	108 Denny Ct	Annetta	TX
153221	Point	154934	Randall Sears	130 Devon Court	Aledo	TX
153222	Point	154935	Kenny Ozee	128 Knisten	Annetta	TX
153245	Point	155024	Kenny Ozee	101 Bluff Terrace	Aledo	TX
153291	Point	155005	Mark Huffman	115 Oak Vista	Annetta	TX
153292	Point	155006	Todd West	157 Muir Hill Drive	Annetta	TX
153698	Point	155419	CHARLIE GILCREASE	9 CROWN RD	WEATHERFORD	TX
153728	Point	155445	GEORGE RIPLEY	100 ST. ANDREWS LN	ALEDO	TX
153798	Point	155519	MURPHY, STACEY	6141 E BANKHEAD HWY	ALEDO	TX
154454	Point	156188	ELLISON CUSTOM HOMES	337 S FLORAS RD	ALEDO	TX
154464	Point	156208	GLASS, DAVID	269 FALCON RIDGE	ALEDO	TX
154483	Point	156213	BECKER, CAROL	170 QUAIL RIDGE	ALEDO	TX
154511	Point	156243	MORRISON GROUP	104 BPR LN	ALEDO	TX
154781	Point	156512	ROBERT PENNY	SARATOGA	WEATHERFORD	TX
154810	Point	156544	CBC Construction	108 Canyon Ridge Drive	Aledo	TX
154813	Point	156547	Debbie Smith	3021 Gardner Road	Hudson Oaks	TX
154828	Point	156563	FRED GARVIN	739 LAKE DR.	WEATHERFORD	TX
155383	Point	157126	KALIAN, JONATHAN	1243 SAM BASS RD	WILLOW PARK	TX
156602	Point	158378	Gilchrist / C.D. Faidley	94 Crown Rd.	Weatherford	TX
156654	Point	158460	Myers Custom Homes	P.O. Box 1777	Weatherford	TX
156689	Point	158464	B.H. Huggins	3803 E. Bankhead	Weatherford	TX
158462	Point	160305	Dave Laurenzo	133 Sam Bass Road	Weatherford	TX
158470	Point	160319	Wendel Holt	69 Crown Road	Weatherford	TX
158481	Point	160333	Kory Hooks	110 Blue Sage	Weatherford	TX
159090	Point	160970	Winn Venture # LLC	302 N Heartz Rd.	Coppell	TX
159201	Point	161088	J.A. Verde	3025 Tex Blvd	Fort Worth	TX
159319	Point	161229	Divine Rock Ranch Inc.	4007 S FM 5	Aledo	TX
159830	Point	161722	PAULUKATIS, ROB	134 DERECK	HUDSON OAKS	TX
160750	Point	162663	BERT THOMPSON	3512 FOOT HILLS	WEATHERFORD	TX
161135	Point	163059	FOX, MIKE	925 TRINITY CT	WEATHERFORD	TX

OWN_ZIP	DRILL_DATE	HOLE_DEPTH	GRID_NUM	COMPLETION	DRILL_METH	WELL_TYPE	TYPE_WORK
76008	7/19/2005	198	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	7/19/2005	198	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	8/31/2005	122	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	9/1/2005	200	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	8/31/2005	122	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	9/29/2005	196	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	9/29/2005	122	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	9/20/2005	197	32196	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	9/28/2005	200	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	9/28/2005	200	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	7/9/2008	250	32119	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	7/31/2008	160	32196	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	9/17/2008	260	32192	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	8/29/2008	175	32191	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	9/16/2008	280	32192	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	9/18/2008	280	32193	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76008	9/22/2008	280	32201	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
	10/8/2008	240	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	10/28/2005	208	32195	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	11/22/2005	272	32118	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
	10/9/2008	220	32117	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	10/10/2008	262	32193	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
76087	10/18/2005	196	32119	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76086	10/14/2005	160	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	10/12/2005	155	32191	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
	6/24/2005	260	32193	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
	7/12/2005	180	32119	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
	7/30/2005	200	32118	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
75019	2/25/2008	220	32193	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76116	8/30/2005	240	32192	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76008	4/13/2007	680	32196	GRAVEL PACKED	MUD ROTARY	DOMESTIC	NEW WELL
76086	11/4/2008	255	32192	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL
	12/6/2008	240	32118	GRAVEL PACKED	AIR ROTARY	DOMESTIC	NEW WELL
76087	12/19/2008	230	32195	GRAVEL PACKED	AIR HAMMER	DOMESTIC	NEW WELL

COUNTY	WELL_STREE	WELL_CITY	WELL_ZIP	OWN_NUMBER	QUADRANGLE	LATDD
Parker	188 Muir Hill Drive	Annetta	76008		3297-313	32.72194
Parker	500 Muir Hill Court	Annetta	76008		3297-313	32.72278
Parker	109 Denny Court	Annetta	76008		3297-313	32.71444
Parker	Lot #6 Muir Hill	Annetta	76008		3297-313	32.71472
Parker	108 Denny Court	Annetta	76008		3297-313	32.71444
Parker	130 Devon Court	Aledo	76008		3297-313	32.73611
Parker	128 Knisten	Annetta	76008		3297-313	32.7225
Parker	101 Bluff Terrace	Aledo	76008		3297-313	32.69139
Parker	115 Oak Vista	Annetta	76008		3297-313	32.73194
Parker	157 Muir Hill Drive	Annetta	76008		3297-313	32.72028
Parker					3297-342	32.76611
Parker					3297-313	32.69361
Parker	6141 E BANKHEAD HWY	ALEDO	76008		3297-313	32.73806
Parker	2305 ANNETTA CENTERPOINT RD	ALEDO	76008		3297-313	32.72944
Parker	269 FALCON RDIGE	ALEDO	76008	2	3297-313	32.72
Parker	170 QUAIL RIDGE	ALEDO	76008	2	3297-313	32.72611
Parker	104 BPR LN	ALEDO	76008		3297-314	32.72417
Parker	SARATOGA	WEATHERFORD			3297-313	32.71694
Parker	108 Canyon Ridge Drive	Aledo	76008		3297-313	32.69639
Parker	3021 Gardner Road	Hudson Oaks	76087		3297-342	32.7625
Parker	739 LAKE DR.	WEATHERFORD			3297-342	32.76694
Parker	1243 SAM BASS RD	WILLOW PARK	76087	1	3297-313	32.74722
Parker	94 Crown Rd.	Weatherford	76087		3297-342	32.76583
Parker	222 Oak Vista Ct.	Weatherford	76086		3297-313	32.72917
Parker	3803 E. Bankhead	Weatherford	76087		3297-313	32.74333
Parker	133 Sam Bass Road	Weatherford		well log #09516	3297-313	32.74639
Parker	69 Crown Road	Weatherford		well log #09525	3297-342	32.76278
Parker	110 Blue Sage	Weatherford		well log #09535	3297-342	32.75944
Parker	290 Spyglass Dr.	Willow Park	76087		3297-313	32.73694
Parker	1735 Woodridge Ct.	Annetta			3297-313	32.73667
Parker	4007 S FM 5	Aledo	76008		3297-313	32.69306
Parker	134 DERECK	HUDSON OAKS			3297-313	32.74389
Parker	3512 FOOT HILLS	WEATHERFORD			3297-342	32.76667
Parker	1200 OLD ANNETTA RD		76008	1	3297-313	32.70333

LONGDD
-97.74028
-97.73778
-97.69722
-97.70583
-97.6975
-97.67833
-97.74056
-97.64917
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